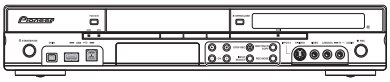
Pioneer sound.vision.soul

Service Manual



DVR-660H-K

ORDER NO.
RRV3751

HDD/DVD RECORDER

DVR-660H-K
DVR-560H-K
DVR-460H-K

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Serial No. Please Confirm 3rd & 4th alphabetical letters.
DVR-660H-K	KCXV	AC 120 V	1	&&DL######$$
DVR-560H-K	KCXV	AC 120 V	1	&&DL######$$
DVR-460H-K	KCXV	AC 120 V	1	&&DL######$$

For details, refer to "Important Check Points for good servicing".

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ⓒ**PIONEER CORPORATION 2008**

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SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

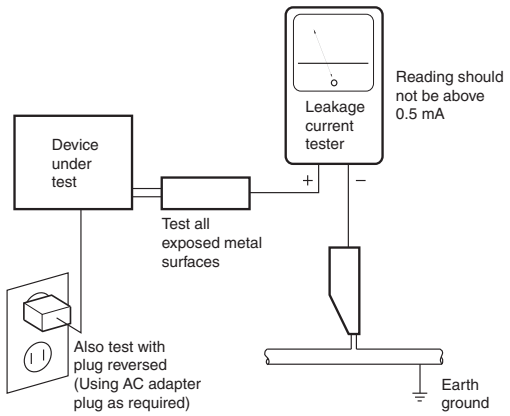
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Reading should not be above 0.5 mA
Leakage current tester
Device under test
+
–
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

LABEL CHECK

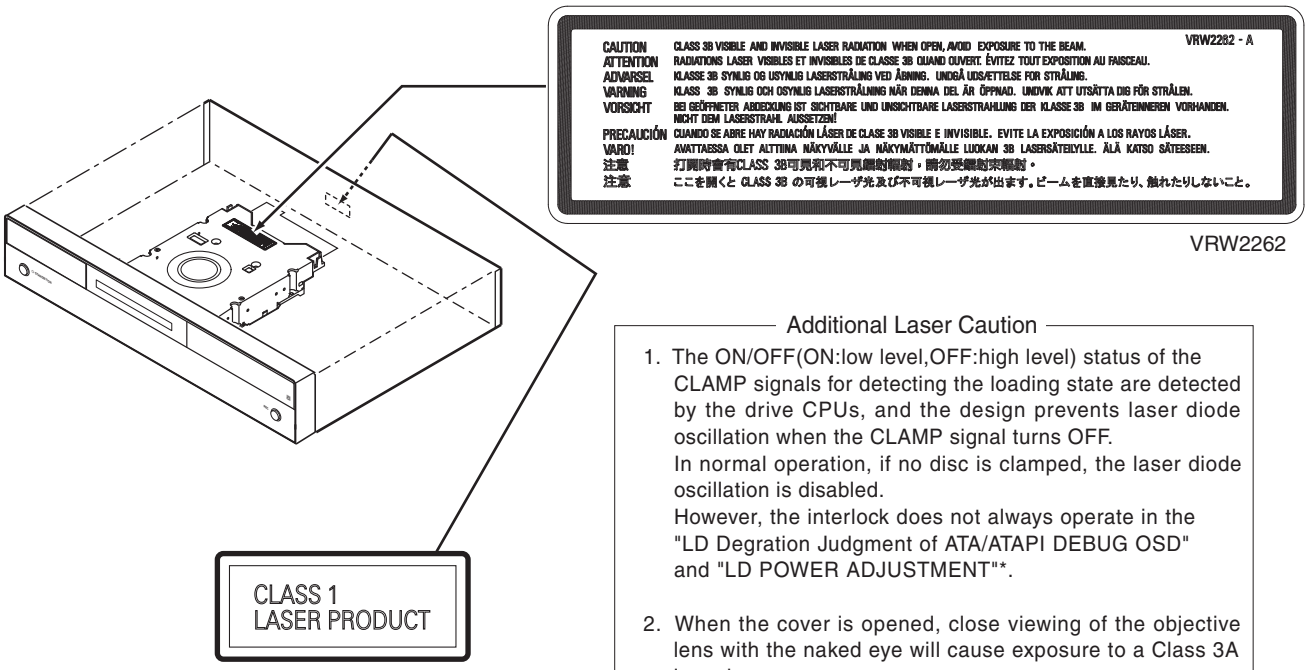
WARNING!

The laser component is capable of emitting radiation exceeding the limit for CLASS 1. A specially instructed person should do servicing operation of the apparatus.

Laser Pickup specifications and Laser characteristics

For CD
- Wave length : 785 nm
- Operating output :
  - Read mode : 1.07 mW (CW), Class1
- Maximum output : Class1M

For DVD
- Wave length : 660 nm
- Operating output :
  - Read mode : 1.08 mW, Class1
  - Write mode : 21.89 mW (Pulse), Class1M
- Maximum output : Class2M


VRW2282 - A
CAUTION CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO THE BEAM.
ATTENTION RADIATIONS LASER VISIBLES ET INVISIBLES DE CLASSE 3B QUAND OUVERT. ÉVITEZ TOUT EXPOSITION AU FAISCEAU.
ADVARSEL KLASSE 3B SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING KLASS 3B SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. UNDVIK ATT UTSÄTTA DIG FÖR STRÅLEN.
VORSICHT BEI GEÖFFNETER ABDECKUNG IST SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG DER KLASSE 3B IM GERÄTEINNEREN VORHANDEN. NICHT DEM LASERSTRAHL AUSSETZEN!
PRECAUCIÓN CUANDO SE ABRE HAY RADIACIÓN LÁSER DE CLASE 3B VISIBLE E INVISIBLE. EVITE LA EXPOSICIÓN A LOS RAYOS LÁSER.
VARO! AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LUOKAN 3B LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
注意 打開時會有CLASS 3B可見和不可見鐳射輻射，瞬初受鐳射束輻射。
注意 ここを開くと CLASS 3B の可視レーザ光及び不可視レーザ光が出ます。ビームを直接見たり、触れたりしないこと。
CLASS 1
LASER PRODUCT

VRW2262

Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the "LD Degration Judgment of ATA/ATAPI DEBUG OSD" and "LD POWER ADJUSTMENT"*.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

* Refer to Pages 47 and 80.

LITHIUM BATTERY NOTICE

CAUTION

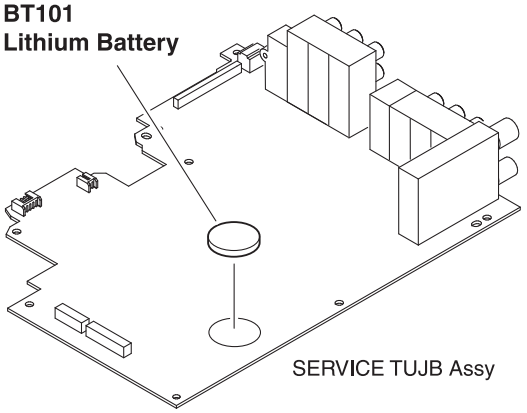
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

When replacing the lithium batteries, follow the note below. Dispose of the used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.
The battery used in this device may present a fire or chemical hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate. Replace only with the same Part Number. Use of another battery may present a risk of fire or explosion.

Note : The lithium battery installation position is shown in the exploded views.

Exploded Views

⚠ **BT101**
Lithium Battery



[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SERVICE PRECAUTIONS

●When servicing this model, some service procedures may reset the customer settings to the factory default settings. Make sure to explain this to the customer.

●An HDD (Hard Disc Drive) is mounted in this product.
When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible.
Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
The user must be made aware that all recorded data are deleted if the HDD is intialized.

1.1 NOTES ON SOLDERING

- For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit.
  Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.

- Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40 °C.
  Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373 °C in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Do NOT use a soldering iron whose tip temperature cannot be controlled.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:
- Parts numbers of lead-free solder:
  GYP1006 1.0 in dia.
  GYP1007 0.6 in dia.
  GYP1008 0.3 in dia.

1.2 NOTES ON HANDLING THE HDD

[1] Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

Reference: Main specifications on damage to the HDD

	During operation	During noperation
Shock G (acceleration)	<approx. 20 G	<approx. 200 G
Temperature change	< 20ºC/hour	
Moisture change	< 20%/hour	

Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection

Falling distance \ Landing surface	Granite surface	Concrete floor	Synthetic-resin-coated table	Antistatic sponge
0.5 inch / 12.7 mm	387	217	200	26
1.0 inch / 25.4 mm	595	457	310	37
2.0 inch / 50.8 mm	1133	600	680	70
4.0 inch / 101.6 mm	1795	1040	1050	267

[2] Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

[Cautions on handling the product on which the HDD is mounted]

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

● Examples of dangerous handling: while the power is on

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

● Examples of dangerous handling: while the power is off

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.

- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit. If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurrs during recording or playback, recorded data may be damaged. Be sure to check operations.

[Cautions on handling the HDD as a repair part]

1. Handle the HDD in a safe environment:
   - Handle the HDD over an antistatic pad that can also absorb shock.
   - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.

2. The following must be observed when handling the HDD:
   - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
   - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
   - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
   - Do NOT bump the HDDs against one another.
   - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
   - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

[Notes on packing for shipment]

- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

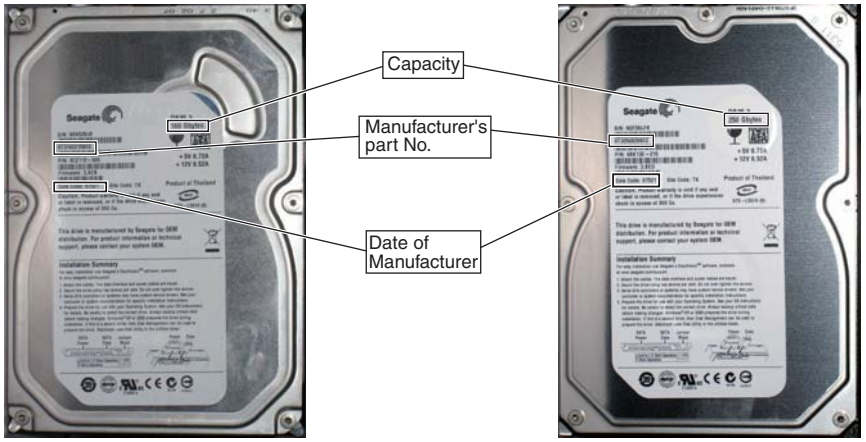
[3]Outline and part No. of the HDDs

Model Name	Capacity	SEAGATE	
		Pioneer's Part No. (for service)	Manufacture's Part No.
DVR-660H-K	250GB	VXF1131	ST3250820SCE
DVR-560H-K DVR-460H-K	160GB	VXF1152	ST3160215SCE

*Pioneer's part No. is not stamped.

- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.

Seagate(160GB)



Seagate(250GB)

1.3 NOTES ON REPLACEMENT OF THE SDRAM

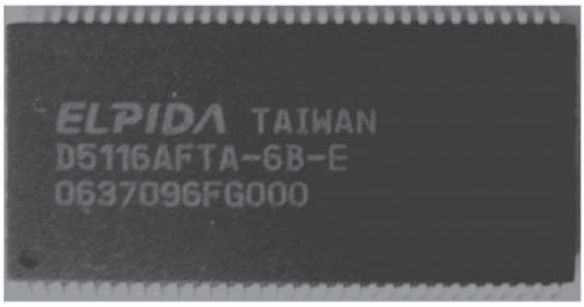
Note when replacing the SDRAM

When replacement of the SDRAM (IC1201 or IC1221) on the MAIN Assy is required, identify the manufacturer of the SDRAM.
If the SDRAM that needs replacement was manufactured by ELPIDA, both IC1201 and IC1221 must be replaced at the same time.
SDRAMs for service are manufactured by SAMSUNG.

- **How to identify the manufacturer**

  Confirm the name of the manufacturer stamped on the surface of the part.

By ELPIDA (replacement of both SDRAMs required)



By SAMSUNG (replacement of only the defective SDRAM possible)

- **Measures to be taken**

  1. If the SDRAM that needs replacement was manufactured by ELPIDA:
     Replace both IC1201 and IC1221 at the same time.
  2. If the SDRAM that needs replacement was manufactured by SAMSUNG:
     Replacement of only the defective SDRAM (IC1201 or IC1221) is possible.

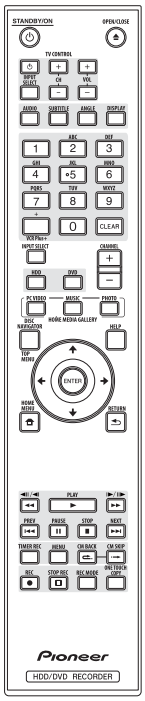
- **Possible malfunctions**

  If SDRAMs made by different manufacturers are mounted on the MAIN Assy, the following malfunctions may occur:
  1. The power does not come on.
  2. High-speed dubbing disabled
  3. Other malfunctions related to the SDRAM

2. SPECIFICATIONS
2.1 ACCESSORIES

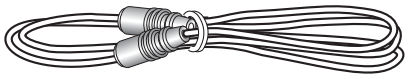
For DVR-660H-K/KCXV

• Remote control ×1
(VXX3288)

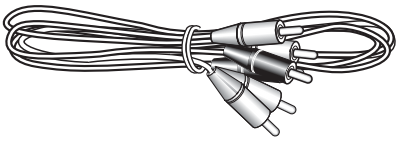


• Operating Instructions (English)(VRB1490)
• Operating Instructions (French)(VRC1461)
• Quick Start Guide (English)(VRG1025)
• Quick Start Guide (French)(VRG1026)
• Warranty Card

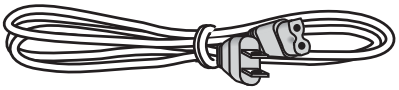
• RF antenna cable ×1
(VDE1088)



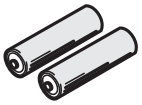
• Audio / Video cable ×1
(red/white/yellow)
(VDE1077)



• Power cable ×1
(ADG7021)



• Dry cell batteries ×2
(AA/R6P)



2.2 SPECIFICATIONS

General

Power requirements . . . . . .120 V, 60 Hz
Power consumption
DVR-660H-K . . . . . .48 W
DVR-560H-K/DVR-460H-K . . . . . .46 W
Power consumption in standby mode. . . . . 0.67 W
(Front panel display: off)
Weight
DVR-660H-K . . . . . 4.4 kg (9 lb. 7 oz.)
DVR-560H-K/DVR-460H-K . . . . . 4.3 kg (9 lb. 5 oz.)
Dimensions
. . . . . .420 mm (W) x 75 mm (H) x 288 mm (D)
(16 9/16 in. (W) x 3 in. (H) 11 6/16 in. (D))
Operating temperature . . . . . +5 °C to +35 °C
(+41 °F to +95 °F)

Operating humidity . . . 5 % to 85 % (no condensation)
TV system . . . . . NTSC

Readable discs
DVD-Video, DVD-RW, DVD-R, DVD+R, DVD+RW, DVD-RAM, Video CD, Super VCD, CD, CD-R/-RW (CD-DA, WMA, MP3, MPEG-4 AAC[1], JPEG, DivX)

Recording discs and formats
DVD-R/-RW: VR mode and Video mode
DVD+R/+RW: +VR mode
DVD-RAM: VR mode
DVD-R DL: VR mode and Video mode
DVD+R DL: +VR mode

Video recording format
Sampling frequency . . . . . 13.5 MHz
Compression format . . . . . .MPEG

Audio recording format
Sampling frequency . . . . . 48 kHz
Compression format . . . . Dolby Digital or Linear PCM
(uncompressed)

Recording time
HDD
DVR-660H-K (250 GB)
XP+ . . . . . Approx. 36 h
Fine (XP) . . . . . Approx. 53 h
Standard Play (SP) . . . . . Approx. 106 h
Long Play (LP) . . . . . Approx. 212 h
Extended Play (EP) . . . . . Approx. 319 h
Super Long Play (SLP) . . . . . Approx. 425 h
Super Extended Play (SEP). . . . . Approx. 532 h
Manual Mode (MN) . . . . . Approx. 36 h to 711 h

DVR-560H-K/DVR-460H-K (160 GB)
XP+ . . . . . Approx. 23 h
Fine (XP) . . . . . Approx. 34 h
Standard Play (SP). . . . . Approx. 68 h
Long Play (LP) . . . . . Approx. 136 h
Extended Play (EP). . . . . Approx. 204 h
Super Long Play (SLP). . . . . Approx. 272 h
Super Extended Play (SEP) . . . . . Approx. 340 h
Manual Mode (MN) . . . . . .Approx. 23 h to 455 h

DVD-R/-RW, DVD+R/+RW, DVD-RAM
Fine (XP) . . . . . Approx. 1 h
Standard Play (SP). . . . . Approx. 2 h
Long Play (LP) . . . . . Approx. 4 h
Extended Play (EP). . . . . Approx. 6 h
Super Long Play (SLP). . . . . Approx. 8 h
Super Extended Play (SEP) . . . . . Approx. 10 h
(DVD-R/-RW, DVD-RAM only)
Manual Mode (MN)
DVD-R/-RW/-RAM . . . . . .Approx. 1 h to 13 h
DVD+R/+RW . . . . . .Approx. 1 h to 8 h

DVD-R DL/DVD+R DL
Fine (XP) . . . . . Approx. 1 h 51 m
Standard Play (SP). . . . . Approx. 3 h 35 m
Long Play (LP) . . . . . Approx. 7 h 11 m
Extended Play (EP). . . . . Approx. 10 h 46 m
Super Long Play (SLP)
. . . . . Approx. 14 h 21 m (DVD-R DL)
. . . . . Approx. 14 h 4 m (DVD+R DL)
Super Extended Play (SEP) . . . . . Approx. 17 h 57 m
(DVD-R DL only)
Manual Mode (MN)
DVD-R DL . . . . . Approx. 1 h 51 m to 24 h
DVD+R DL . . . . . Approx. 1 h 51 m to 14 h 4 m

Timer

Programmes. . . . . 1 month/32 programmes
Clock . . . . . Quartz lock (12-hour digital display)

Tuner

Receivable channels
VHF . . . . . .2 ch to 13 ch
UHF . . . . . .14 ch to 69 ch
CATV . . . . . C1 ch to C125 ch

Note
1 The MPEG-4 AAC files can be played or copied only with the DVR-660H-K.

Input/Output

VHF/UHF antenna input/output terminal
. . . . . VHF/UHF set 75 Ω (F-shape connector)
Video input Input1, 3 (rear), Input 2(front)
Input level . . . . . 1 Vp-p (75 Ω)
Jacks RCA jacks
Video output. . . . . Output 1, 2
Output level . . . . . 1 Vp-p (75 Ω)
Jacks RCA jack
S-Video input Input1, 3 (rear), Input 2(front)
Y (luminance) - Input level. . . . . 1 Vp-p (75 Ω)
C (colour) - Input level . . . . . 300 mVp-p (75 Ω)
Jacks. . . . . .4-pin mini DINS-Video outputOutput 1, 2
Y (luminance) - Output level . . . . . 1 Vp-p (75 Ω)
C (colour) - Output level. . . . . 300 mVp-p (75 Ω)
Jacks 4-pin mini DIN
Component video output
Output level . . . . . Y: 1.0 Vp-p (75 Ω)
P_B, P_R: 0.7 Vp-p (75 Ω)
Jacks . . . . . RCA jacks
Audio input Input1, 3 (rear), Input 2(front) L/R
During audio input. . . . . 2 V rms
(Input impedance: more than 22 kΩ)
Jacks RCA jacks
Audio output . . . . . Output 1, 2 L/R
During audio output . . . . . 2 V rms
(Output impedance: less than 1.5 kΩ)
Jacks RCA jacks (Output)
Control input . . . . . Mini jack
Digital audio output . . . . . .Coaxial
DV input . . . . . 4-pin (front)
(i.LINK/IEEE 1394 standard)
USB . . . . . Type A (front), Type B (front)
HDMI output 19-pin
LAN (DVR-660H-K only)
. . . . . .Ethernet jack (10BASE-T/100BASE-TX)

Supplied accessories

Remote control 1
Dry cell batteries (AA/R6P). 2
Audio/Video cable (red/white/yellow) 1
RF antenna cable 1
Power cable 1
Operating Instructions
Warranty card 1

Note: The specifications and design of this product are subject to change without notice, due to improvement.

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The contents of the Gracenote data in both the recorder and the dedicated server are not 100% guaranteed.

The supply of the Gracenote data in the dedicated server may be stopped without prior notice for the reason of maintenance, etc.

The Gracenote data communication service of the dedicated server may be stopped without the consent of the users in case the required content cannot be collected or for other reason that hinders provision of the service.

2.3 DISC/CONTENT FORMAT

HDD/DVD Recording and playback compatibility

This recorder can play and record all widely-used DVD disc types, and additionally provides HDD functionality. The table below shows some specific compatibility differences between the different disc types.

	HDD	DVD-R		DVD-RW		DVD+R	DVD +RW	DVD -RAM
Marks used in this manual	HDD	DVD (VR) *1	DVD (Video)	DVD (VR) *1	DVD (Video) *2	DVD+R	DVD+RW	DVD-RAM *13, 16
Logos	HDD HARD DISK DRIVE	DVD R		DVD RW	DVD RW RW 2	RW DVD+R	RW DVD+ReWritable; RW High Speed DVD+ReWritable	DVD RAM
Re-recordable/ Erasable	●	*3	*3	●	●	*3	*14	●
Editing of recorded programmes	●	●	*4	●	*4	*4	*4	●
Recording of Copy-once protected material	●	*12		*12				*12
Playback in other players/recorders	*n/a*	*5	*6	*7	*6	*6, 15	*8	*9
Chase play	●							
16:9 and 4:3 programme recording	●	●		●				●
Dual mono broadcast recording of both audio channels	*10, 11	*11		*11				*11

Notes to table

*1 Must be initialized for VR mode recording.
*2 Must be initialized for Video mode recording.
*3 Erasable, but free space does not increase.
*4 Cannot erase sections, edit chapters or use playlist editing.
*5 Must be compatible with DVD-R (VR) playback.
*6 Finalize using this recorder (may not playback in some units).
*7 Must be compatible with DVD-RW (VR) playback.
*8 Must be compatible with DVD+RW playback.
*9 Must be compatible with DVD-RAM playback.
*10 Only when HDD Recording Format is set to Video Mode Off.
*11 Only when the recording mode is not set to LPCM.
*12 CPRM-compatible discs only.
*13 Take the disc out of the cartridge before use. Only Panasonic and Maxell discs have been tested to work reliably with this recorder. Discs from other makers may become unusable when recorded or edited.
*14 Erasing a title does not increase the available recording time, nor increase the number of recordable titles left.
*15 Must be compatible with DVD+R playback.
*16 Depending on the disc, it may have to be initialized before it can be recorded.
In this case, initialization may take over one hour.

DVD is a trademark of DVD Format/Logo Licensing Corporation.

Using DVD-R DL/DVD+R DL discs

DVD-R DL (Dual-Layer) and DVD+R DL (Double-Layer) discs contain two recordable layers on a single side, giving about 1.8 times the recording capacity of a conventional single-layer disc. This unit can record to both DVD-R DL and DVD+R DL discs.

- If you intend to play DVD-R DL (Video mode) or DVD+R DL discs recorded on this unit on other DVD recorders/players, you must finalize them. (Note that some DVD recorders/players may not play even finalized DL discs.)
- This logo indicates that the disc is a DVD-R DL or DVD+R DL disc:

Correct operation has been confirmed for DL discs:

- DVD-R DL ver. 3.0/2x to 4x
  Mitsubishi Kagaku Media (Verbatim)
- DVD-R DL ver. 3.0/2x to 8x
  Mitsubishi Kagaku Media (Verbatim)
  That's
  JVC
- DVD+R DL 2.4x
  Mitsubishi Kagaku Media (Verbatim)
  RICOH
- DVD+R DL 2.4x to 8x
  Mitsubishi Kagaku Media (Verbatim)
  RICOH

About DualDisc playback

A DualDisc is a new two -sided disc, one side of which contains DVD content – video, audio, etc. – while the other side contains non-DVD content such as digital audio material.

The non-DVD, audio side of the disc is not compliant with the CD audio specification and therefore may not play.

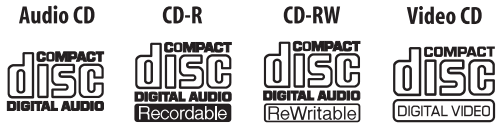
It is possible that when loading or ejecting a DualDisc, the opposite side to that being played will be scratched. Scratched discs may not be playable.

The DVD side of a DualDisc plays in this product. DVD-Audio content will not play.

For more detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

Other disc compatibility

In addition to DVD, this recorder is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the logos on the disc and/or disc packaging shown below. Note however that some disc types, such as recordable CD (and DVD), may be in an unplayable format — see below for further compatibility information.



CD-R/-RW compatibility

This recorder cannot record CD-R or CD-RW discs.

- Readable formats: CD audio, Video CD, ISO 9660 CD-ROM* containing MP3, WMA, MPEG-4 AAC[1], JPEG or DivX files
  ** ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this recorder.*
- Multi-session playback: Yes (except CD audio and Video CD)
- Unfinalized disc playback: CD audio only

Compressed audio compatibility

- Compatible media: DVD-ROM, DVD-R/-RW, DVD+R/+RW, DVD-RAM, CD-ROM, CD-R, CD-RW, USB
- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA), MPEG-4 AAC[1]

Note

1 The MPEG-4 AAC files can be played or copied only with the DVR-660H-K.

- Sampling rates (MP3/WMA): 32 kHz, 44.1 kHz or 48 kHz
- Sampling rates (MPEG-4 AAC[1]): 22.05 kHz, 24 kHz, 32 kHz, 44.1 kHz or 48 kHz
- Bit-rates: Any (128 kbps or higher recommended)
- Variable bit-rate (VBR) WMA/MP3/MPEG-4 AAC[1] playback: Yes[2]
- WMA encoder compatibility: Windows Media Codec 8 *(files encoded using Windows Media Codec 9 may be playable but some parts of the specification are not supported; specifically, Pro, Lossless, Voice and VBR)*
- DRM (Digital Rights Management)[3] file playback: No
- File extensions: .mp3, .wma, .m4a[1] (these must be used for the recorder to recognize MP3, WMA and MPEG-4 AAC[1] files – do not use for other file types)
- File structure: The recorder can load up to 99 folders/999 files at one time *(if there are more files/folders that this on the disc then more can be reloaded)*

About MPEG-4 AAC[1]

Advanced Audio Coding (AAC) is at the core of the MPEG-4 AAC standard, which incorporates MPEG-2 AAC, forming the basis of the MPEG-4 audio compression technology. The file format and extension used depend on the application used to encode the AAC file. This unit plays back AAC files encoded by iTunes® bearing the extension '**.m4a**'. DRM-protected files will not play, and files encoded with some versions of iTunes® may not play, or filenames may display incorrectly.

Apple and iTunes are trademarks of Apple Inc., registered in the U.S. and other countries.

WMA (Windows Media™ Audio) content

This recorder can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation.

Windows Media is a trademark of Microsoft Corporation.

This product includes technology owned by Microsoft Corporation and cannot be used or distributed without a license from Microsoft Licensing, Inc.

DivX video compatibility

DivX is a compressed digital video format created by the DivX® video codec from DivX, Inc. Keeping the same terminology as DVD-Video, individual DivX video files are called "Titles". When naming files/titles on a disc prior to burning, keep in mind that by default they will be played in alphabetical order.

- Official DivX® Certified product.
- Plays all versions of DivX® video (including DivX® 6) with standard playback of DivX® media files.
- File extensions: .avi and .divx (these must be used for the recorder to recognize DivX video files). *Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this recorder.*

Note

1 The MPEG-4 AAC files can be played or copied only with the DVR-660H-K.
2 The elapsed playing time may not be displayed properly.
3 DRM (digital rights management) copy protection is a technology designed to prevent unauthorized copying by restricting playback, etc. of compressed audio files on devices other than the PC (or other recording equipment) used to record it. For detailed information, please see the instruction manuals or help files that came with your PC and/or software.

- File structure: Up to 99 folders or 999 files.

DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license.

DivX® VOD content

In order to play DivX VOD (video on demand) content on this recorder, you first need to register the recorder with your DivX VOD content provider. You do this by generating a DivX VOD registration code, which you submit to your provider.

Some DivX VOD content may only be playable a fixed number of times. When you load a disc containing this type of DivX VOD content, the remaining number of plays is shown on-screen and you then have the option of playing the disc (thereby using up one of the remaining plays), or stopping. If you load a disc that contains expired DivX VOD content (for example, content that has zero remaining plays), the message **Rental Expired** is displayed.

If your DivX VOD content allows an unlimited number of plays, then you may load the disc into your recorder and play the content as often as you like, and no message will be displayed.

Important

- DivX VOD content is protected by a DRM system. This restricts playback of content to specific, registered devices.
- If you load a disc that contains DivX VOD content not authorized for this recorder, the message **Authorization Error** is displayed and the content will not play.
- Resetting the recorder will not cause you to lose your registration code.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files
  **File format used by digital still cameras*
- Sampling ratio: 4:4:4, 4:2:2, 4:2:0
- Horizontal resolution: 160 to 5120 pixels
- Vertical resolution: 120 to 3840 pixels
- Progressive JPEG compatible: No
- File extensions: .jpg, .jpeg, .jpe, .jif, .jfif (must be used for the recorder to recognize JPEG files – do not use for other file types)
- File structure: The recorder can load up to 99 folders/999 files at one time *(if there are more files/folders that this on the disc then more can be reloaded)*

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs recorded in packet write mode (UDF format) are not compatible with this recorder.

Check the DVD-R/-RW or CD-R/-RW software disc boxes for additional compatibility information.

Dolby Digital

Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

DTS

Manufactured under license under U.S. Patent #: 5,451,942 & other U.S. and worldwide patents issued & pending. DTS and DTS Digital Out are registered trademarks and the DTS logos and Symbol are trademarks of DTS, Inc. © 1996-2007 DTS, Inc. All Rights Reserved.

About the internal hard disk drive

The internal hard disk drive (HDD) is a fragile piece of equipment. When used without the proper care or in the wrong conditions, it is possible that recorded contents may be damaged or lost entirely, in some cases making even normal playback or recording impossible. Please understand that in the event of repair or replacement of the HDD or related components, all your HDD recordings will be lost.

Please use the recorder following the guidelines below to protect against possible HDD failure.

The HDD should not be regarded as a place to store recordings permanently. We recommend that you back up your important recordings onto DVD discs in order to protect against accidental loss.

Pioneer cannot under any circumstances accept responsibility for any direct or indirect loss arising from any inconvenience or loss of recorded material resulting from HDD failure.

- Install and use the recorder on a stable, level surface.
- Do not block the rear vent/cooling fan.
- Do not use the recorder in excessively hot or humid places, or in places that may be subject to sudden changes in temperature. Sudden changes in temperature can cause condensation to form inside the recorder. This can be a cause of HDD failure.
- Do not move the recorder immediately after switching it off. If you need to move the recorder, please follow the steps below:

  1 After the message **POWER OFF** is shown on the front panel display, wait at least two minutes.

  2 Unplug from the wall socket.

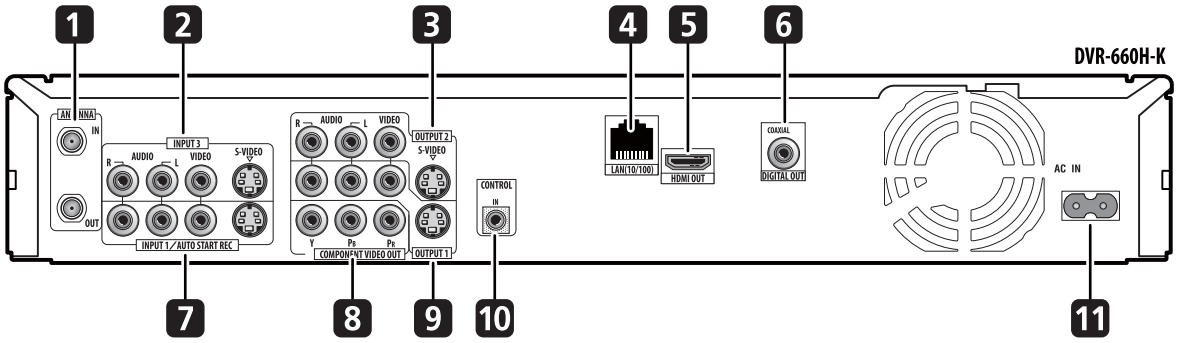
  3 Move the recorder.
- If there's a power failure while the recorder is on there is a chance that some data on the HDD will be lost.
- The HDD is very delicate. If used over time in an improper manner or in an unsuitable environment, it is possible that the HDD will fail. Signs of problems include playback unexpectedly freezing and noticeable block noise (mosaic) in the picture. However, sometimes there will be no warning signs of HDD failure. If the HDD fails, no playback of recorded material will be possible. In this case it will be necessary to replace the HDD unit.

Optimizing HDD performance

As you record and edit material on the HDD, the data on the disk becomes fragmented, eventually affecting the recorder's performance. Before this happens, the recorder will warn you that it is time to optimize the HDD.

2.4 PANEL FACILITIES

[1] Rear Panel



1 ANTENNA IN (RF IN)/OUT

Connect your TV antenna to the **ANTENNA IN (RF IN)** jack. The signal is passed through to the **ANTENNA OUT** jack for connection to your TV.

2 INPUT 3

Stereo analog audio, video and S-Video inputs for connection to a satellite receiver, set top box, etc.

3 OUTPUT 2

Stereo analog audio, video and S-video outputs for connection to a TV or AV amplifier/receiver.

4 LAN (10/100)

(DVR-660H-K only)

Ethernet port for 10BASE-T (10 Mbps)/ 100BASE-TX (100 Mbps) network connection

5 HDMI OUT

HDMI output for high quality digital audio and video.

6 DIGITAL AUDIO OUT (COAXIAL)

Coaxial digital audio jack for connecting to an AV amplifier/receiver, Dolby Digital/DTS/ MPEG decoder or other equipment with a digital input.

7 INPUT 1/AUTO START REC

Stereo analog audio, video and S-video inputs for connection to a satellite receiver, set top box, etc.

8 COMPONENT VIDEO OUT

A high-quality video output for connecting to a TV or monitor with a component video input.

9 OUTPUT 1

Stereo analog audio, video and S-Video outputs for connection to a TV or AV amplifier/receiver.

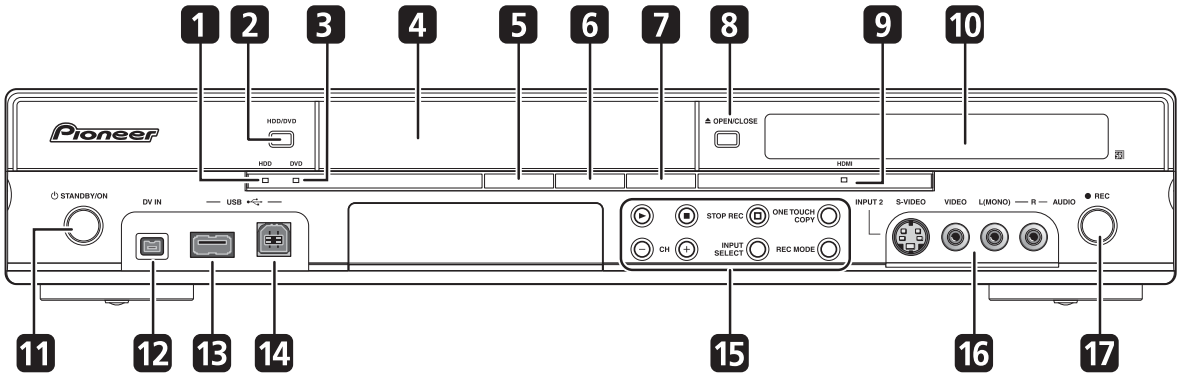
10 CONTROL IN

Use to control this recorder from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the Pioneer SR mark. Connect the **CONTROL OUT** of the other component to the **CONTROL IN** of this recorder using a mini-plug cord.

11 AC IN – Power inlet

Connect to a power outlet using the supplied power cable after making all other connections.

[2] Front Panel



1 HDD indicator
Lights when the hard disk (HDD) is selected.

2 HDD/DVD
Press to switch between HDD and DVD for recording and playback.

3 DVD indicator
Lights when the DVD drive is selected.

4 Disc tray

5 PC VIDEO
Press to play DivX files you have not yet viewed.

6 MUSIC
Press to play music files in random order.

7 PHOTO
Press to play JPEG files in random order.

8 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

9 HDMI indicator
Lights when this recorder is connected to HDMI (HDCP) compatible component.

10 Front panel display and IR remote sensor

11 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

12 DV IN
A DV input i.LINK connector, suitable for connecting a DV camcorder.

13 USB port (Type A)
USB port for connecting an HDD camcorder, digital camera, keyboard or other USB device.

14 USB port (Type B)
USB port for connecting a PictBridge-compatible printer or PC.

15 ▶
Press to start or restart playback.

■
Press to stop playback.

□ STOP REC
Press to stop recording.

ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

CH +/–
Use to change channels, skip chapters/tracks, etc.

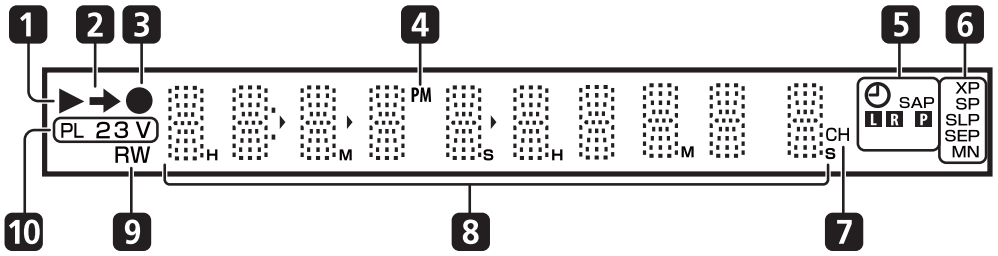
INPUT SELECT
Press to change the input used for recording.

REC MODE
Press repeatedly to cycle through recording modes (picture quality).

16 INPUT 2
Audio/video input (stereo analog audio; composite and S-Video), especially suitable for camcorders, game consoles, portable audio, etc.

17 ● REC
Press to start recording. Press repeatedly to set the recording time in 30 minute blocks.

[3] Display



1 ▶
Lights during playback; blinks when playback is paused.

2 ➡
Lights when copying.

3 ●
Lights during recording; blinks when recording is paused.

4 PM
Lights to indicate PM (after midday) for the clock display.

5
Lights when a timer recording has been set. (Indicator blinks if the timer has been set to DVD but there isn't a recordable disc loaded, or the timer has been set to record to the HDD but the HDD is not recordable.)

SAP
Lights when the currently selected TV channel has a Second Audio Programme channel.

L R
Indicates which channels are recorded when **Dual Mono** is selected.

P
Lights when the component video output is set to progressive scan.

6 Recording quality indicators

XP
Lights when the recording mode is set to **XP** (high quality).

SP
Lights when the recording mode is set to **SP** (standard play).

LP/SLP
Lights when the recording mode is set to **LP** (long play) or **SLP** (super-long play).

EP/SEP
Lights when the recording mode is set to **EP** (extended play) or **SEP** (super-extended play).

MN
Lights when the recording mode is set to **MN** (manual recording level) mode.

7 CH
Channel indicator for the built-in TV tuner.

8 Character display

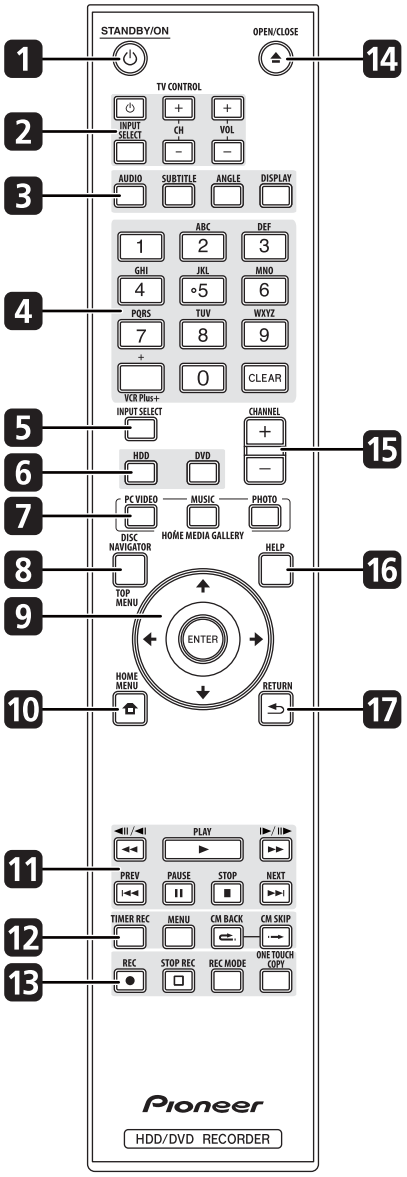
9 R/RW
Lights when a recordable DVD-R or DVD-RW disc is loaded.

10 PL
Lights when a VR mode disc is loaded and the recorder is in Play List mode.

2 3
Shows the remote control mode (if nothing is displayed, the remote control mode is 1).

V
Lights when an unfinalized Video mode disc is loaded.

[4] Remote Control Unit



1 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

2 TV CONTROL buttons
After setting up, use these controls to control your TV.

3 AUDIO
Press to change the audio language or channel. (When the recorder is stopped, press to change the tuner audio.)

SUBTITLE
Press to display/change the subtitles included in multilingual DVD-Video discs.

ANGLE
Press to switch camera angles on discs with multi-angle scenes.

DISPLAY
Displays/changes the on-screen information displays.

4 Number buttons, CLEAR, +
Use the number buttons for track/chapter/title selection; channel selection, and so on. The same buttons can also be used to enter names for titles, discs and so on.

VCR Plus+®
Press then use the number buttons to enter a PlusCode® programming number for timer recording.

** VCR Plus+ and PlusCode are registered trademarks of Gemstar Development Corporation.*

The VCR Plus+ system is manufactured under license from Gemstar Development Corporation.

Use **CLEAR** to clear an entry and start again.

5 INPUT SELECT
Press to change the input to use for recording.

6 HDD
Press to select the hard disk (HDD) for recording and playback.

DVD
Press to select DVD for recording and playback.

7 HOME MEDIA GALLERY
Files stored on the HDD can easily be played using these buttons.

PC VIDEO
Press to play DivX files you have not yet viewed.

MUSIC
Press to play music files in random order.

PHOTO
Press to play JPEG files in random order.

8 DISC NAVIGATOR / TOP MENU
Press to display the Disc Navigator screen, or the top menu if a DVD-Video or finalized DVD-R/-RW (Video) disc is loaded.

9 ↑/↓/←/→ and ENTER
Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option.

10 HOME MENU
Press to display the Home Menu, from which you can navigate all the functions of the recorder.

11 Playback controls

◄◄ ►►
Press to start reverse or forward scanning. Press again to change the speed.

◄II/◄I I►/II►
While paused, press and hold to start slow-motion playback. Press repeatedly to change the playback speed.

While paused, press to advance a single frame in either direction.

► PLAY
Press to start playback.

I◄◄ PREV ►►I NEXT
Press to skip to the previous or next title/chapter/track; or to display the previous or next menu page.

II PAUSE
Press to pause playback or recording.

■ STOP
Press to stop playback.

12 TIMER REC
Press to start setting a timer recording.

MENU
Press to display the disc menu if a DVD-Video, finalized DVD-R/-RW (Video mode) or finalized DVD+R/+RW disc is loaded.

CM BACK (commercial back)
Press repeatedly to skip progressively backward through the video playing.

CM SKIP (commercial skip)
Press repeatedly to skip progressively forward through the video playing.

13 Recording controls

● REC
Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins.

□ STOP REC
Press to stop recording.

REC MODE
Press repeatedly to change the recording mode (picture quality).

ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

14 ▲ OPEN/CLOSE
Press to open/close the disc tray.

15 CHANNEL +/–
Press to change the channel of the built-in TV tuner.

16 HELP
Press for help on how to use the current GUI screen.

17 RETURN
Press to go back one level in the on-screen menu or display.

3. BASIC ITEMS FOR SERVICE

3.1 CHECK POINTS AFTER SERVICING

To keep the product quality after servicing, confirm recommended check points shown below.

No.	Procedures	Item to be checked
1	Confirm the firmware version on the first screen on Service Mode. Also check the compatibility of each firmware (OK or NG).	The version of each firmware must be the latest. All of firmware compatibility must be "OK". Update firmware to the latest one, if it is not the latest or the compatibility is "NG".
2	Confirm whether the customer complain has been solved. If the customer complain occurs with the specific disc, use it for the operation check.	The customer complain must not be reappeared. Video, audio and operations must be normal.
3	Perform the HDD physical test (Self-Test on HDD check mode).	"NG" must not be appeared.
4	Confirm playback error rates at the innermost and outermost tracks by using the following disc. DVD test disc (GGV1025)	The error rates must be less than 8.0e-4.
5	Record from the tuner (or an external source) to the HDD for 1 minute. After that, play back the content.	Video, audio and operations must be normal.
6	Copy the recorded content on the HDD in the previous step to a DVD-RW disc. After that, play back the disc.	Video, audio and operations must be normal.
7	Confirm the user setting, and whether the test-recorded content have been deleted.	Be sure to delete the test-recorded content on the HDD.
8	Check the appearance of the product.	No scratches or dirt on its appearance after receiving it for service.

See the table below for the items to be checked regarding video and audio:

Items to be checked regarding video	Item to be checked regarding audio
Block noise	Distortion
Horizontal noise	Noise
Dot noise	Volume too low
Disturbed image (video jumpiness)	Volume too high
Too dark	Volume fluctuating
Too bright	Sound interrupted
Mottled color	

[1] Cleaning

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

[2] Necessary Procedure List When Replacing Assys

Following is the surely necessary procedures and the product state after changing, when replacing next ASSYs.

Replaced ASSY	Necessary setting	State after replacing	
		User setting	HDD contents
MAIN ASSY	1. Model setting 2. LD power adjustment 3. CPRM setting 4. Firmware update	×	○
TUJB ASSY	1. Model setting 2. CPRM setting 3. Firmware update	×	○
LOADER ASSY	1. LD power adjustment	○	○
HDD	1. CPRM setting 2.Gracenote Database update	○	×

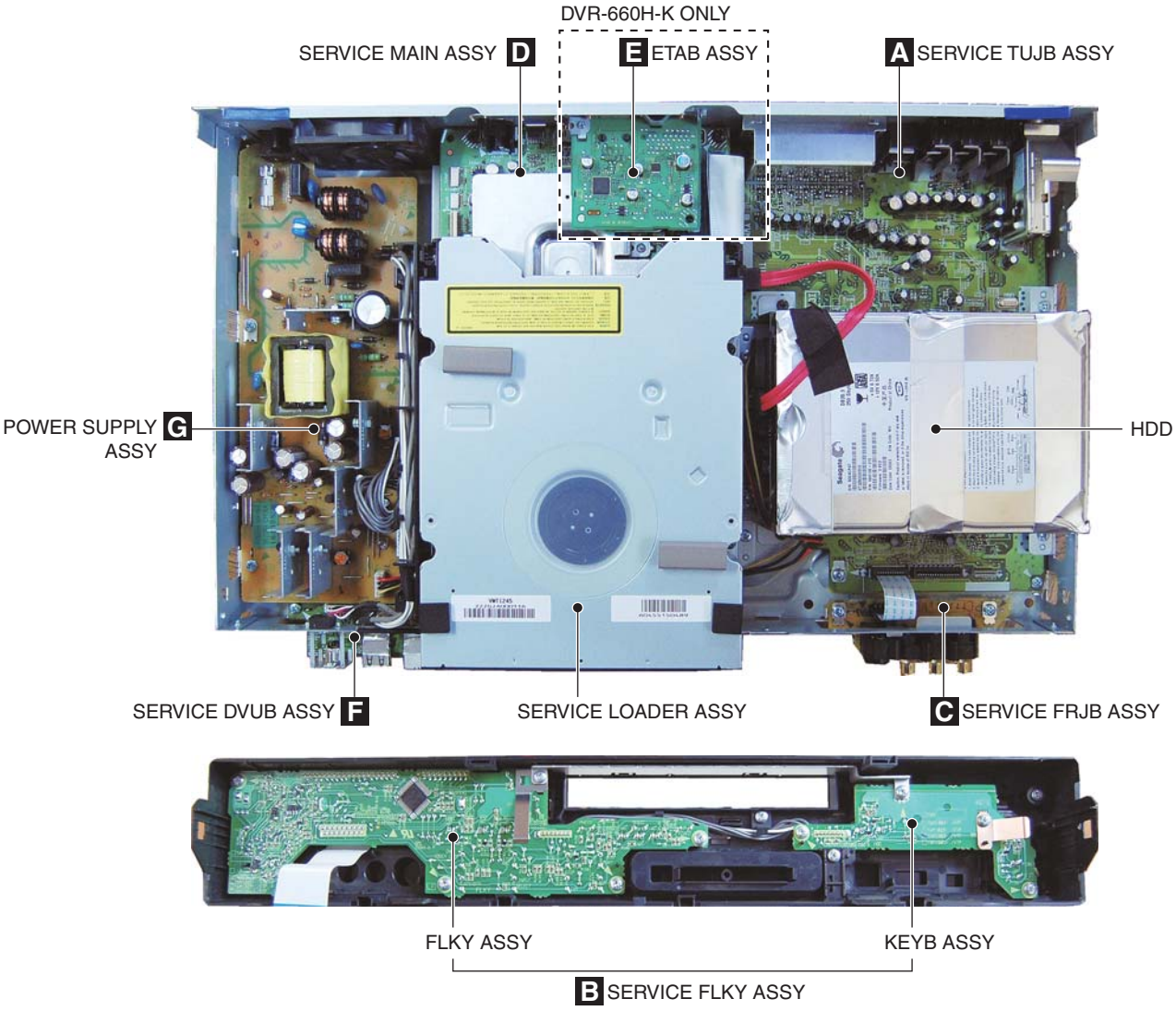
3.2 QUICK REFERENCE

Description of work	Procedure	Jigs
LD power adjustment	[ESC]+[CX]+[1]+[0]	GGF1381 : Service Remote Control Unit
		GGV1054 : CD-ROM (CDT-313)
		GGV1036 : DVD-ROM DL (DVDT-002)
		GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)
		GGV1282 : Blank DVD-RW (JVC VD-W120XH5)
		GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)
ID input	[ESC]+[STEREO]	GGF1381 : Service Remote Control Unit
		GGV1321 : ID disc
Firmware update	[REC STOP]+[PLAY]	Update disc
Version check	[ESC]+[DISP]	GGF1381 : Service Remote Control Unit
Error Rate Measurement	[ESC]+[DISP]+[DIG/ANA] × twice	GGF1381 : Service Remote Control Unit
		Operation check disc (See remarks)
HDD Check Mode	[ESC]+[CX]+[0]+[1]	GGF1381 : Service Remote Control Unit
Indication of VR-playback-related error log	[ESC]+[DISP]+[5]+[DIG/ANA]	GGF1381 : Service Remote Control Unit
Indication of VR-recording-related error log	[ESC]+[DISP]+[4]+[DIG/ANA] × 3times	GGF1381 : Service Remote Control Unit

Remarks

Disc for check of recording/playback operations (Note) When judging the drive quality, make sure to use the operation check disc.	Operation check discs (manufacturers and model numbers)	Error rate threshold
	GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)	3.3e-3 or below
	GGV1279 : Blank DVD-R DL (MCM VHR21YD1)	L0 : 3.3e-3 or below
		L1 : 3.3e-3 or below
	GGV1280 : Blank DVD+R (That's DR+120TY5PA)	3.3e-3 or below
	GGV1281 : Blank DVD+R DL (MCM VTR21N1)	L0 : 3.3e-3 or below
		L1 : 3.3e-3 or below
	GGV1189 : Blank DVD-RW (JVC VD-W120N10)	3.3e-3 or below
	GGV1282 : Blank DVD-RW [RW2] (JVC VD-W120XH5)	3.3e-3 or below
	GGV1283 : Blank DVD+RW (RICOH D4RWV-S3CW)	3.3e-3 or below
	GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)	3.3e-3 or below
	GGV1036 : DVD-ROM DL (DVDT-002)	L0/L1 : 8.0e-4 or below
How to read error rate	X.Xe-Y Y: The bigger the better, X X: The smaller the better	
How to exit from Service Mode	[ESC]	

3.3 PCB LOCATIONS



NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
• For DVR-660H-K model			
	1	ETAB ASSY	VWV2344
NSP	1	TUJB ASSY	YWM1007
	2	SERVICE DVUB ASSY	YXX1001
	2	SERVICE TUJB ASSY	YXX1011
NSP	1	FLKB ASSY	YWM1005
	2	SERVICE FRJB ASSY	YXX1004
	2	SERVICE FLKY ASSY	YXX1007
NSP	1	SERVICE LOADER MAIN	VXU1014
	2	SERVICE MAIN ASSY	VXX3309
⚠	1	POWER SUPPLY ASSY	VWR1408
	1	HDD	VXF1131

Mark	No.	Description	Part No.
• For DVR-560H-K,460H-K model			
NSP	1	TUJB ASSY	YWM1007
	2	SERVICE DVUB ASSY	YXX1001
	2	SERVICE TUJB ASSY	YXX1011
NSP	1	FLKB ASSY	YWM1005
	2	SERVICE FRJB ASSY	YXX1004
	2	SERVICE FLKY ASSY	YXX1007
NSP	1	SERVICE LOADER MAIN	VXU1013
	2	SERVICE MAIN ASSY	VXX3308
⚠	1	POWER SUPPLY ASSY	VWR1408
	1	HDD	VXF1152

3.4 JIGS LIST

[1] Jigs List

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	Adjustment, diagnosis
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video
DVD Recorder Data Disc Type2	———— (*)	Diagnosis (ID data setting)
FFC Cable (40p)	GGD1436	Diagnosis of MAIN Assy
CD-ROM	GGV1054	LD Power Adjustment
DVD-ROM DL	GGV1036	LD Power Adjustment
Blank DVD-R	GGV1278	LD Power Adjustment
Blank DVD-RW	GGV1282	LD Power Adjustment
Blank DVD-RAM	GGV1284	LD Power Adjustment
Disc Ejection Rod	GGF1529	Emergency Disc Ejection
USB Cable	GGD1445	USB Check Mode
RS-232C I/F Jig	GGF1348	Serial Update
FFC Cable (7P)	VDA1681	Serial Update

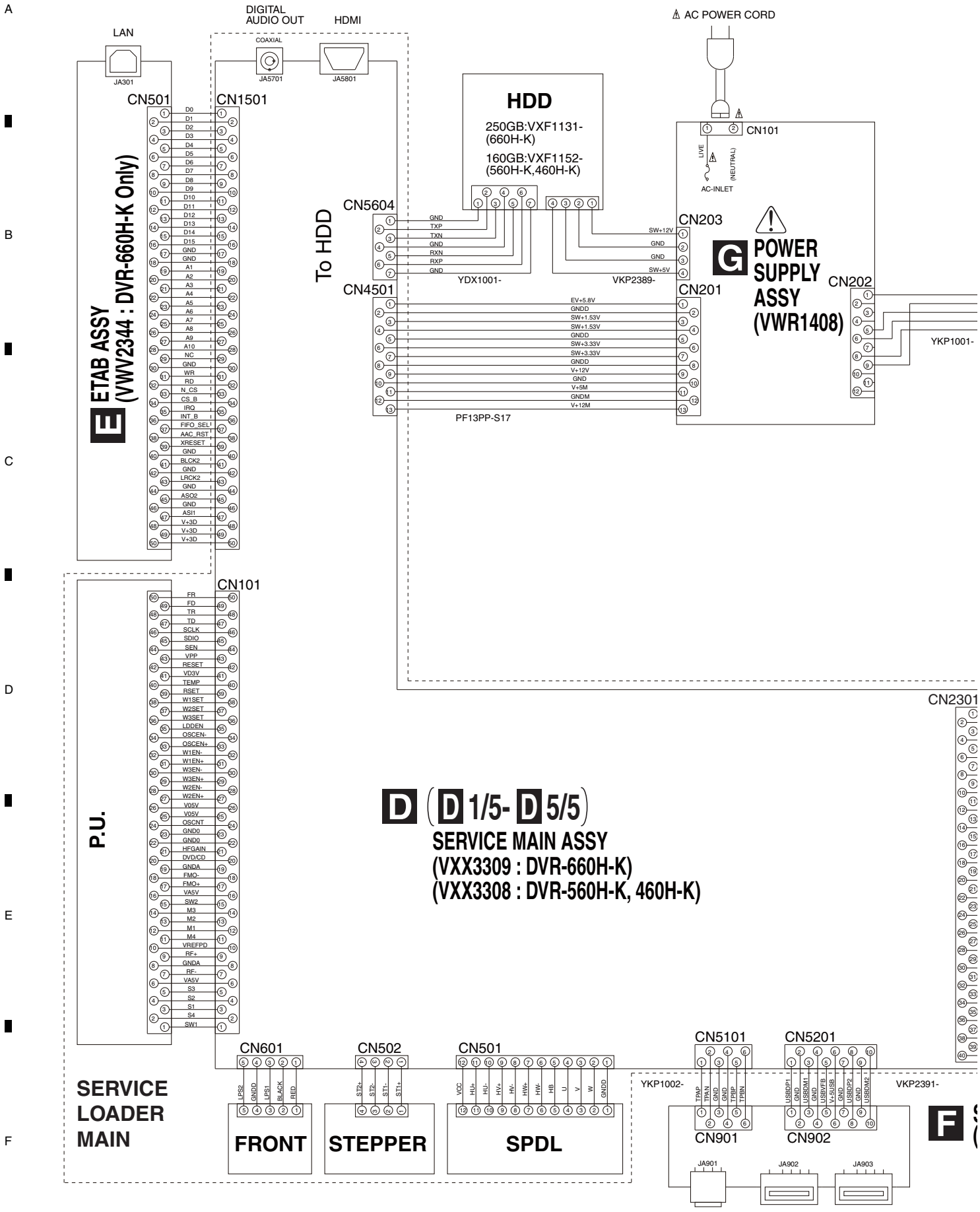
(*) Be sure to use the latest disc (Type 2).
In Apr, 2008, the latest disc is GGV1321.

[2] Lubricants and Glues List

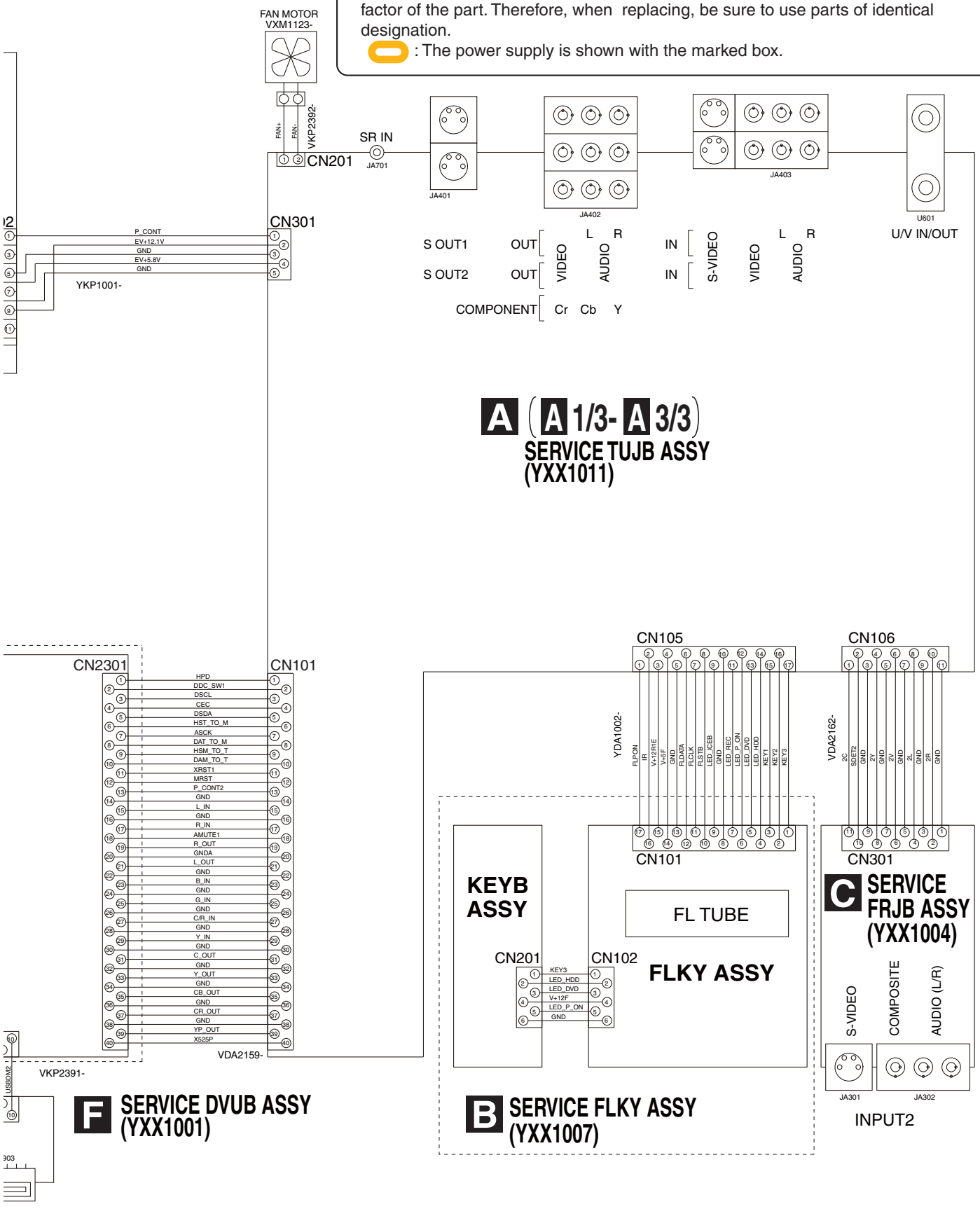
Name	Lubricants and Glues No.	Remarks
Hanarl	GEM1041	refer to "9.3 FRONT PANEL SECTION"

4. BLOCK DIAGRAM

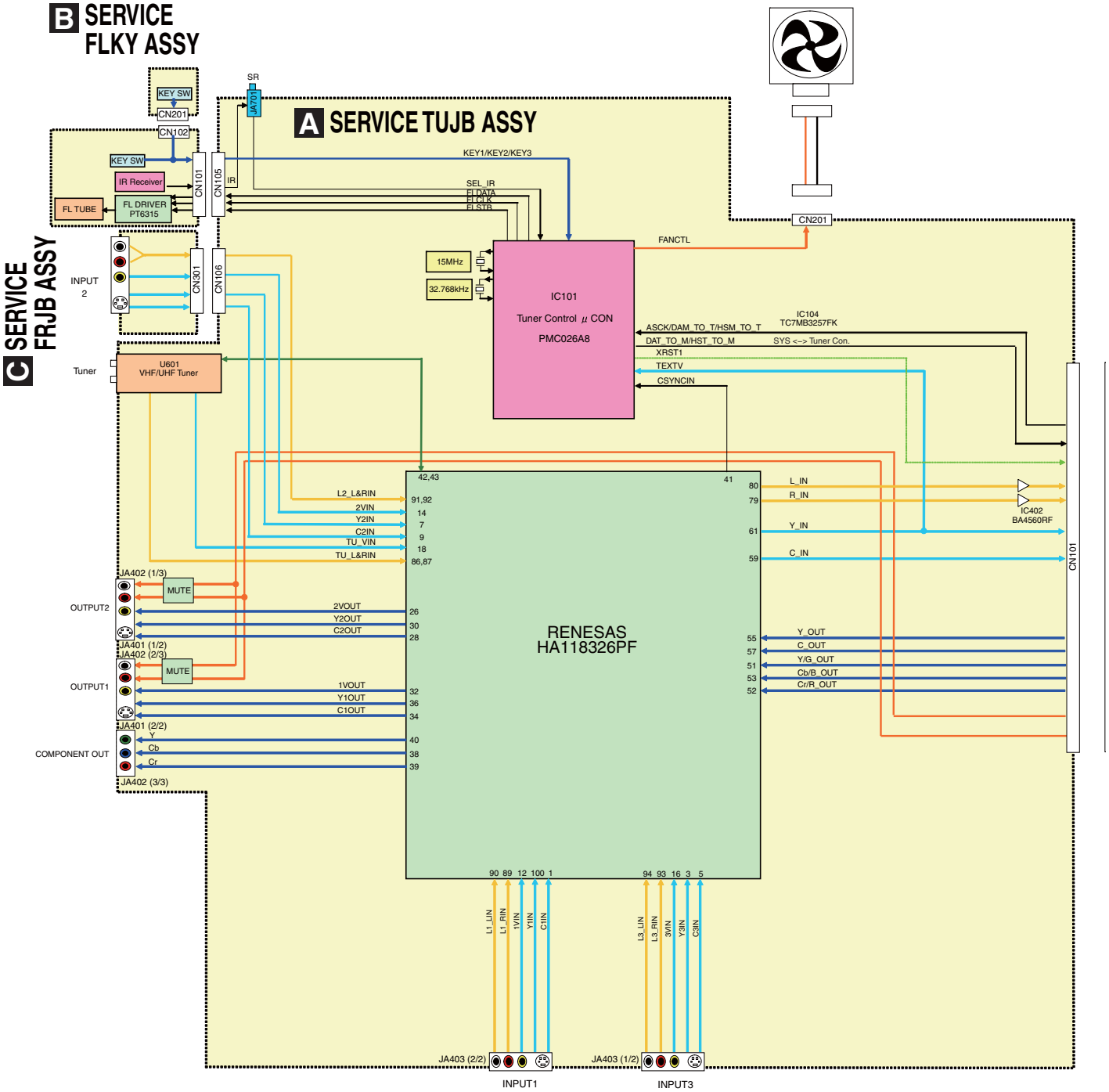
4.1 OVERALL WIRING DIAGRAM

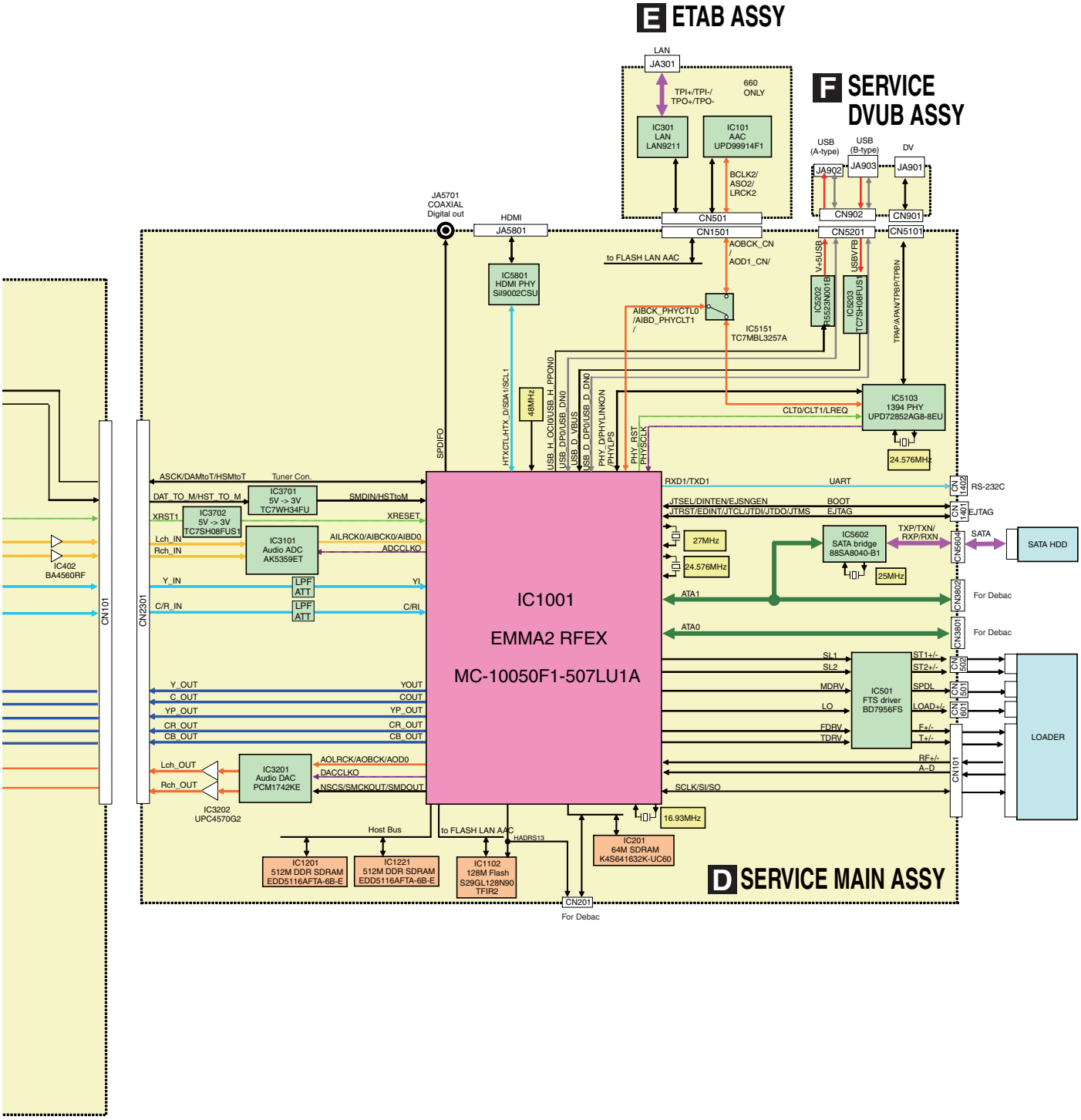


When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
: The power supply is shown with the marked box.

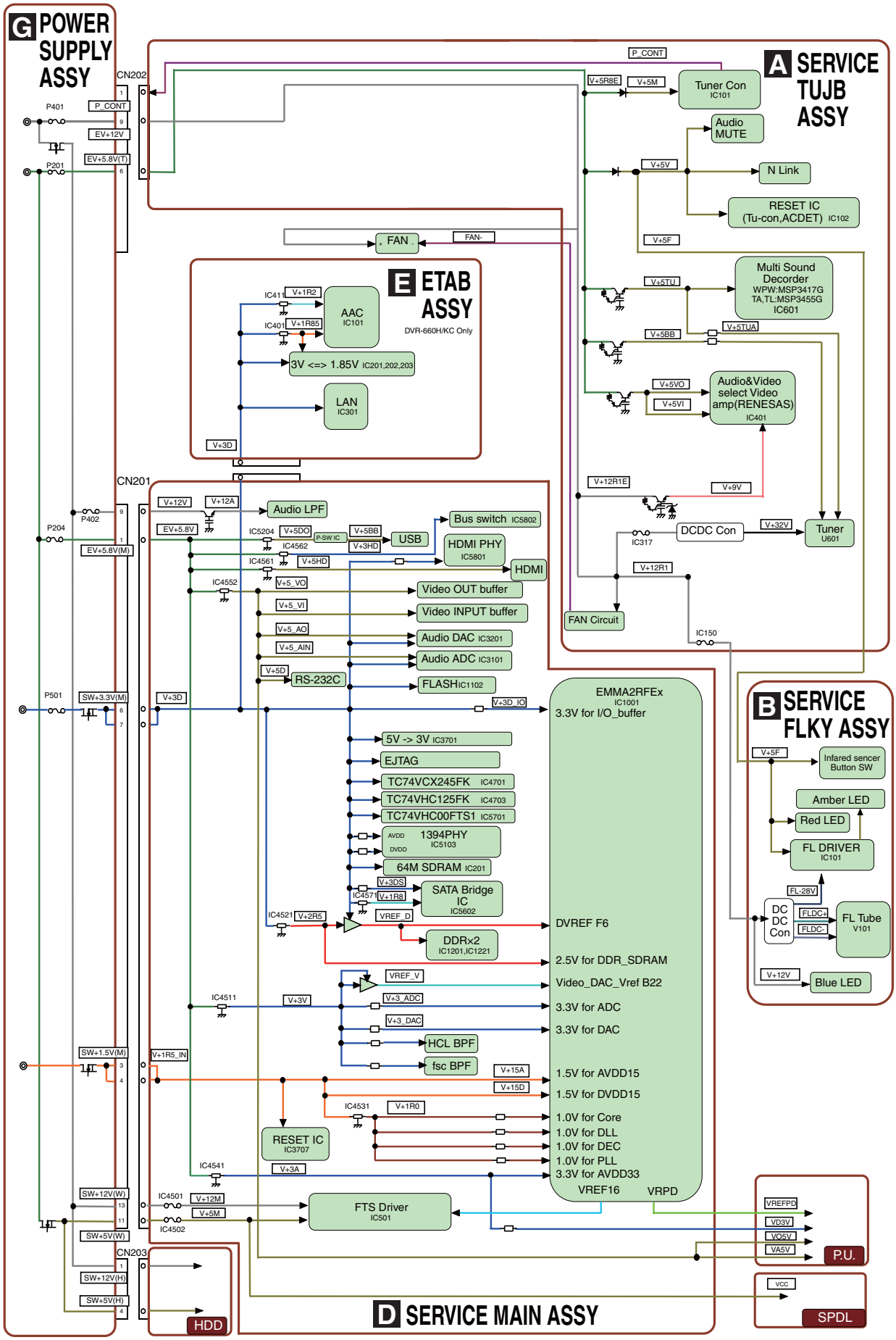


4.2 OVERALL BLOCK DIAGRAM



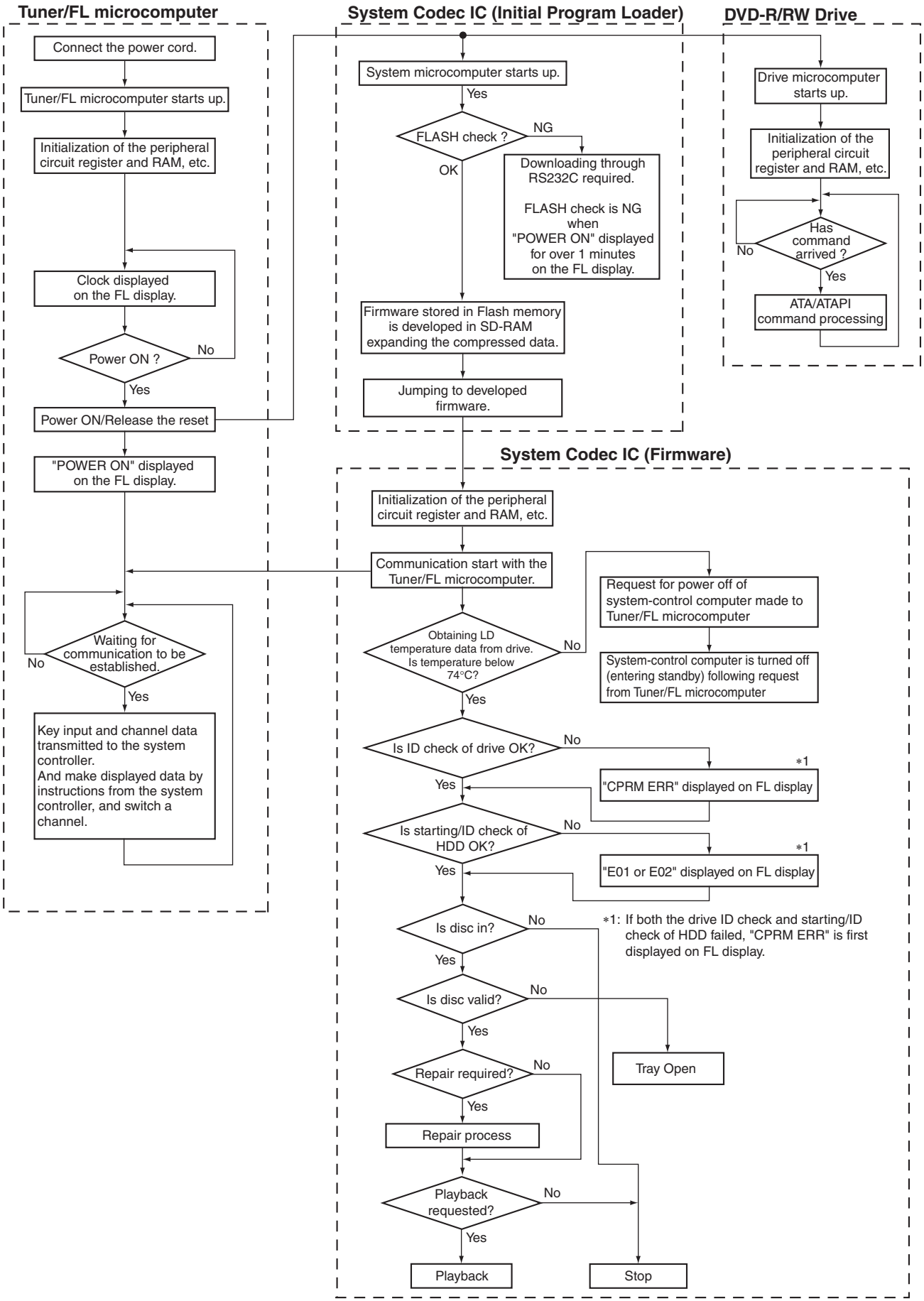

E ETAB ASSY
F SERVICE DVUB ASSY
D SERVICE MAIN ASSY
LAN
JA301
TPI+/TPI-/
TPO+/TPO-
660 ONLY
IC301 LAN LAN9211
IC101 AAC UPD99914F1
BCLK2/ ASO2/ LRCK2
USB (A-type)
USB (B-type)
DV
JA902
JA903
JA901
CN902
CN901
CN501
CN1501
CN5201
CN5101
JA5701 COAXIAL Digital out
HDMI
JA5801
IC5801 HDMI PHY Sil9002CSU
to FLASH LAN AAC
AOBCK_CN / AOD1_CN/
V+5USB
USBVFB
IC5202 RS523N001B
IC3203 TC7SH108FUS
AIBCK_PHYCTL0 /AIBD_PHYCLT1 /
IC5151 TC7MBL3257A
TPAP/APAN/TPBP/TPBN
IC5103 1394 PHY UPD72852AG8-8EU
CLT0/CLT1/LREQ
24.576MHz
SPDIFO
HTXCTL/HTX_D/SDA1/SCL1
48MHz
USB_H_OCI0/USB_H_PPON0
USB_DP0/USB_DN0
USB_D_VBUS
USB_D_DP0/USB_D_DN0
PHY_DPHYLINKON
PHYLPS
PHY_RST
PHYSCLK
CN101
CN2301
ASCK/DAMtoT/HSMtoT
Tuner Con.
DAT_TO_M/HST_TO_M
IC3701 5V -> 3V TC7WH34FU
SMDIN/HSTtoM
XRST1
IC3702 5V -> 3V TC7SH08FUS1
XRESET
Lch_IN
Rch_IN
IC3101 Audio ADC AK5359ET
AILRCK0/AIBCK0/AIBD0
ADCCLKO
IC402 BA4560RF
Y_IN
LPF ATT
YI
C/R_IN
LPF ATT
C/RI
IC1001
EMMA2 RFEX
MC-10050F1-507LU1A
RXD1/TXD1
UART
RS-232C
JTSEL/DINTEN/EJSNGEN
JTRST/EDINT/JTCL/JTDI/JTDO/JTMS
BOOT
EJTAG
CN1402
CN1401
27MHz
24.576MHz
IC5602 SATA bridge 88SA8040-B1
TXP/TXN/ RXP/RXN
SATA
CN5604
SATA HDD
25MHz
ATA1
For Debac
CN3802
ATA0
CN3801
Y_OUT
C_OUT
YP_OUT
CR_OUT
CB_OUT
YOUT
COUT
YP_OUT
CR_OUT
CB_OUT
SL1
SL2
MDRV
LO
FDRV
TDRV
IC501 FTS driver BD7956FS
ST1+/-
ST2+/-
SPDL
LOAD+/-
F+/-
T+/-
CN502
CN501
CN601
LOADER
RF+/-
A-D
CN3101
SCLK/SI/SO
Lch_OUT
Rch_OUT
IC3201 Audio DAC PCM1742KE
AOLRCK/AOBCK/AOD0
DACCLKO
NSCS/SMCKOUT/SMDOUT
IC3202 UPC4570G2
16.93MHz
Host Bus
to FLASH LAN AAC
HADRS13
IC1201 512M DDR SDRAM EDD5116AFTA-6B-E
IC1221 512M DDR SDRAM EDD5116AFTA-6B-E
IC1102 128M Flash S29GL128N90 TFIR2
IC201 64M SDRAM K4S641632K-UC60
CN201
For Debac

4.3 POWER BLOCK DIAGRAM

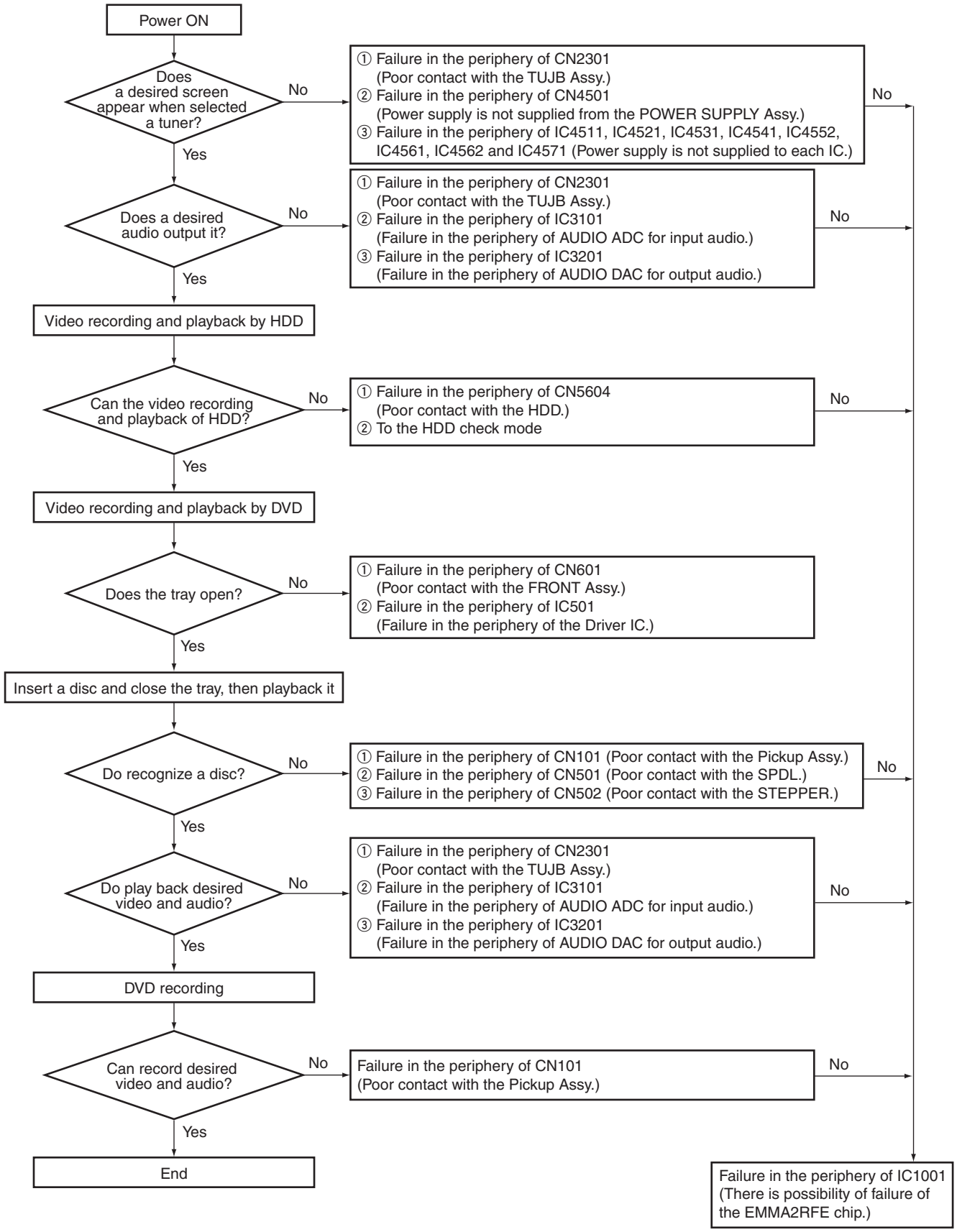


5. DIAGNOSIS

5.1 SETUP SEQUENCE


Tuner/FL microcomputer
Connect the power cord.
Tuner/FL microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Clock displayed on the FL display.
Power ON ?
No
Yes
Power ON/Release the reset
"POWER ON" displayed on the FL display.
Waiting for communication to be established.
No
Yes
Key input and channel data transmitted to the system controller.
And make displayed data by instructions from the system controller, and switch a channel.
System Codec IC (Initial Program Loader)
System microcomputer starts up.
Yes
FLASH check ?
NG
OK
Downloading through RS232C required.
FLASH check is NG when "POWER ON" displayed for over 1 minutes on the FL display.
Firmware stored in Flash memory is developed in SD-RAM expanding the compressed data.
Jumping to developed firmware.
DVD-R/RW Drive
Drive microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Has command arrived ?
No
Yes
ATA/ATAPI command processing
System Codec IC (Firmware)
Initialization of the peripheral circuit register and RAM, etc.
Communication start with the Tuner/FL microcomputer.
Obtaining LD temperature data from drive. Is temperature below 74°C?
No
Yes
Request for power off of system-control computer made to Tuner/FL microcomputer
System-control computer is turned off (entering standby) following request from Tuner/FL microcomputer
Is ID check of drive OK?
No
Yes
*1
"CPRM ERR" displayed on FL display
Is starting/ID check of HDD OK?
No
Yes
*1
"E01 or E02" displayed on FL display
Is disc in?
No
Yes
*1: If both the drive ID check and starting/ID check of HDD failed, "CPRM ERR" is first displayed on FL display.
Is disc valid?
No
Yes
Tray Open
Repair required?
No
Yes
Repair process
Playback requested?
No
Yes
Playback
Stop

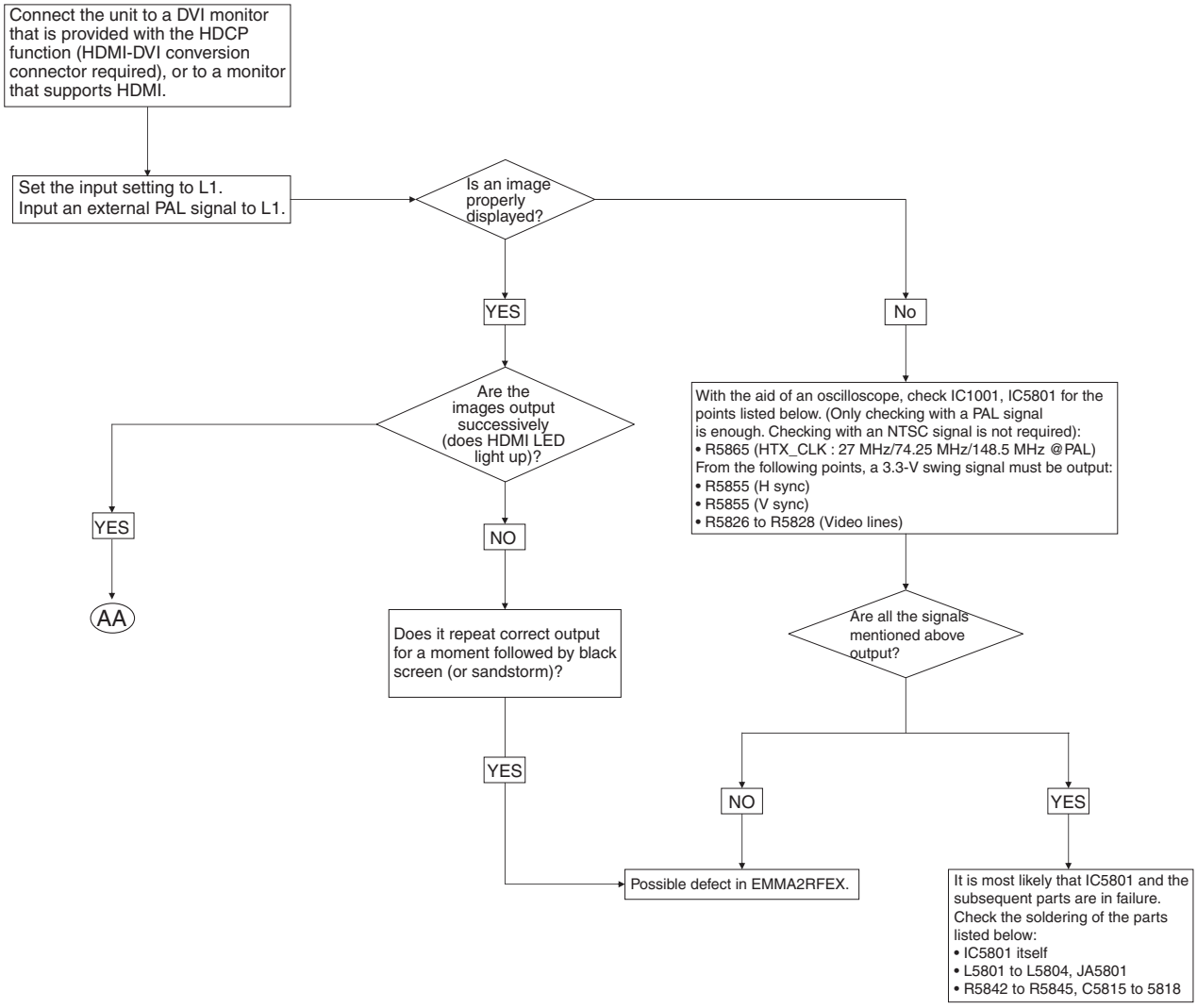
5.2 DIAGNOSIS OF THE MAIN ASSY

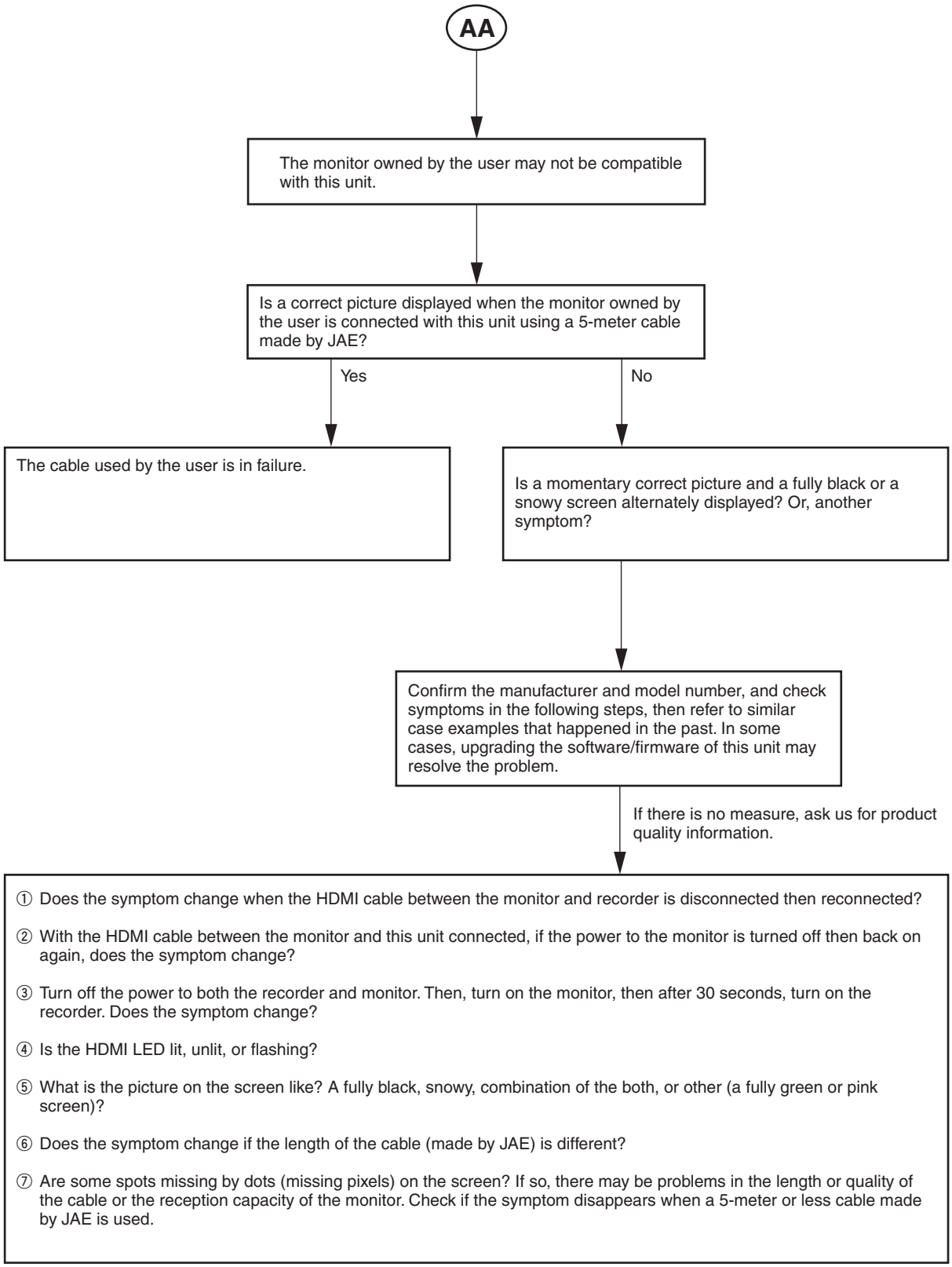

Power ON
Does a desired screen appear when selected a tuner?
No
① Failure in the periphery of CN2301 (Poor contact with the TUJB Assy.)
② Failure in the periphery of CN4501 (Power supply is not supplied from the POWER SUPPLY Assy.)
③ Failure in the periphery of IC4511, IC4521, IC4531, IC4541, IC4552, IC4561, IC4562 and IC4571 (Power supply is not supplied to each IC.)
No
Yes
Does a desired audio output it?
No
① Failure in the periphery of CN2301 (Poor contact with the TUJB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
Video recording and playback by HDD
Can the video recording and playback of HDD?
No
① Failure in the periphery of CN5604 (Poor contact with the HDD.)
② To the HDD check mode
No
Yes
Video recording and playback by DVD
Does the tray open?
No
① Failure in the periphery of CN601 (Poor contact with the FRONT Assy.)
② Failure in the periphery of IC501 (Failure in the periphery of the Driver IC.)
Yes
Insert a disc and close the tray, then playback it
Do recognize a disc?
No
① Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
② Failure in the periphery of CN501 (Poor contact with the SPDL.)
③ Failure in the periphery of CN502 (Poor contact with the STEPPER.)
No
Yes
Do play back desired video and audio?
No
① Failure in the periphery of CN2301 (Poor contact with the TUJB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
DVD recording
Can record desired video and audio?
No
Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
No
Yes
End
Failure in the periphery of IC1001 (There is possibility of failure of the EMMA2RFE chip.)

[1] Diagnosis of the HDMI Block

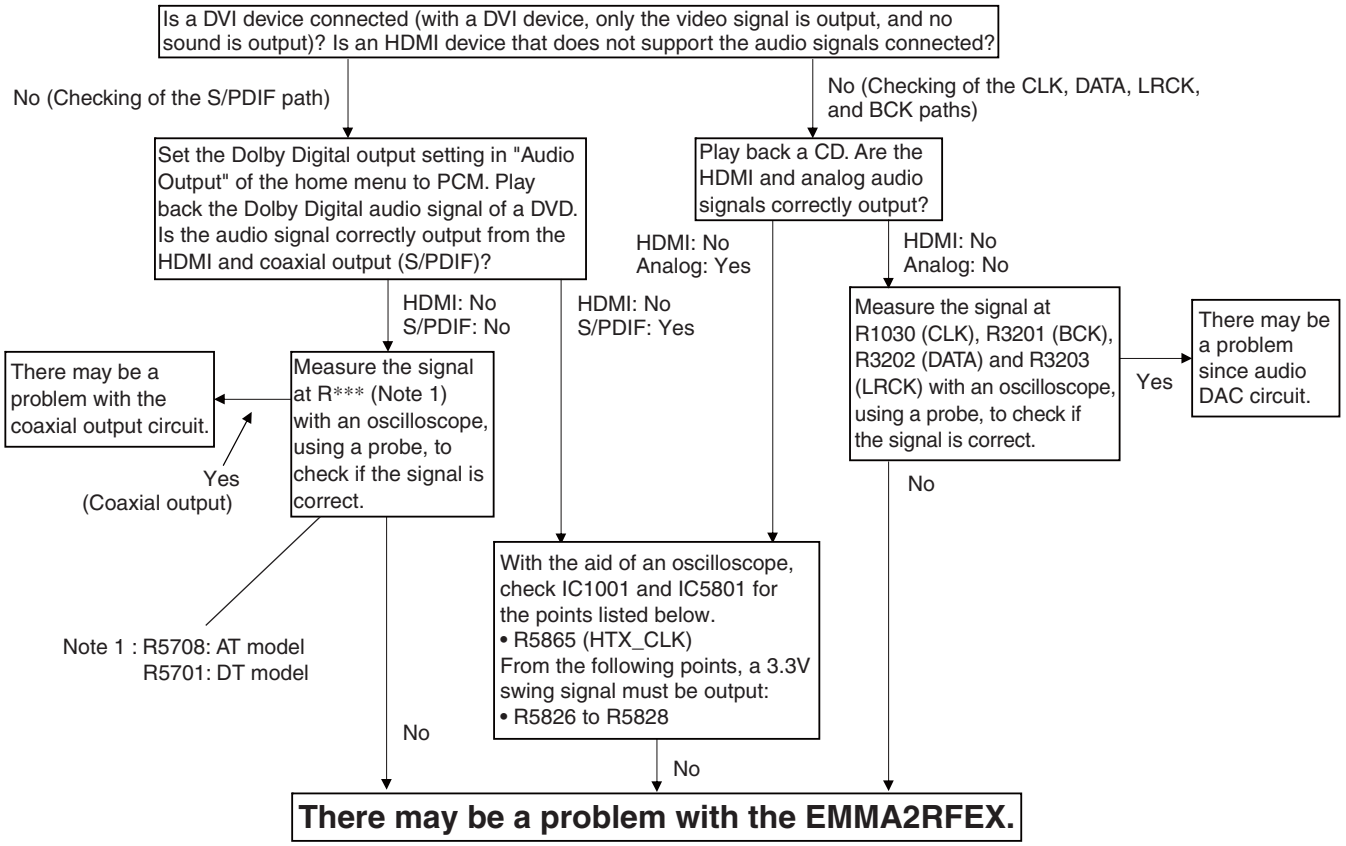
1. In a case when only the HDMI video is not outputted

*This flowchart shows how to confirm the output from the HDMI block on the basis that an external input signal to the L1 connector is through-output from the analog output connector properly.


Connect the unit to a DVI monitor that is provided with the HDCP function (HDMI-DVI conversion connector required), or to a monitor that supports HDMI.
Set the input setting to L1.
Input an external PAL signal to L1.
Is an image properly displayed?
YES
No
Are the images output successively (does HDMI LED light up)?
YES
AA
NO
Does it repeat correct output for a moment followed by black screen (or sandstorm)?
YES
Possible defect in EMMA2RFEX.
With the aid of an oscilloscope, check IC1001, IC5801 for the points listed below. (Only checking with a PAL signal is enough. Checking with an NTSC signal is not required):
• R5865 (HTX_CLK : 27 MHz/74.25 MHz/148.5 MHz @PAL)
From the following points, a 3.3-V swing signal must be output:
• R5855 (H sync)
• R5855 (V sync)
• R5826 to R5828 (Video lines)
Are all the signals mentioned above output?
NO
YES
It is most likely that IC5801 and the subsequent parts are in failure.
Check the soldering of the parts listed below:
• IC5801 itself
• L5801 to L5804, JA5801
• R5842 to R5845, C5815 to 5818


AA
The monitor owned by the user may not be compatible with this unit.
Is a correct picture displayed when the monitor owned by the user is connected with this unit using a 5-meter cable made by JAE?
Yes
No
The cable used by the user is in failure.
Is a momentary correct picture and a fully black or a snowy screen alternately displayed? Or, another symptom?
Confirm the manufacturer and model number, and check symptoms in the following steps, then refer to similar case examples that happened in the past. In some cases, upgrading the software/firmware of this unit may resolve the problem.
If there is no measure, ask us for product quality information.
① Does the symptom change when the HDMI cable between the monitor and recorder is disconnected then reconnected?
② With the HDMI cable between the monitor and this unit connected, if the power to the monitor is turned off then back on again, does the symptom change?
③ Turn off the power to both the recorder and monitor. Then, turn on the monitor, then after 30 seconds, turn on the recorder. Does the symptom change?
④ Is the HDMI LED lit, unlit, or flashing?
⑤ What is the picture on the screen like? A fully black, snowy, combination of the both, or other (a fully green or pink screen)?
⑥ Does the symptom change if the length of the cable (made by JAE) is different?
⑦ Are some spots missing by dots (missing pixels) on the screen? If so, there may be problems in the length or quality of the cable or the reception capacity of the monitor. Check if the symptom disappears when a 5-meter or less cable made by JAE is used.

2. In a case when only the HDMI audio is not outputted


Is a DVI device connected (with a DVI device, only the video signal is output, and no sound is output)? Is an HDMI device that does not support the audio signals connected?
No (Checking of the S/PDIF path)
No (Checking of the CLK, DATA, LRCK, and BCK paths)
Set the Dolby Digital output setting in "Audio Output" of the home menu to PCM. Play back the Dolby Digital audio signal of a DVD. Is the audio signal correctly output from the HDMI and coaxial output (S/PDIF)?
Play back a CD. Are the HDMI and analog audio signals correctly output?
HDMI: No
S/PDIF: No
HDMI: No
S/PDIF: Yes
HDMI: No
Analog: Yes
HDMI: No
Analog: No
There may be a problem with the coaxial output circuit.
Measure the signal at R*** (Note 1) with an oscilloscope, using a probe, to check if the signal is correct.
Measure the signal at R1030 (CLK), R3201 (BCK), R3202 (DATA) and R3203 (LRCK) with an oscilloscope, using a probe, to check if the signal is correct.
Yes
There may be a problem since audio DAC circuit.
Yes
(Coaxial output)
No
With the aid of an oscilloscope, check IC1001 and IC5801 for the points listed below.
• R5865 (HTX_CLK)
From the following points, a 3.3V swing signal must be output:
• R5826 to R5828
Note 1 : R5708: AT model
R5701: DT model
No
No
There may be a problem with the EMMA2RFEX.

6. SERVICE MODE

◆ Overview and Purposes

To be used to check the status of the product and to collect the information for failure diagnosis.
The following information to be used for servicing is displayed:
[1] First screen : Version, HDD information, etc.
[2] Second screen : ATA/ATAPI debug screen (Writer information)
[4] Fourth screen : VR-recording-related error logs
[5] Fifth screen : VR-playback-related error logs

Each screen has sublevel screens.

[Note] After entering any Service mode screen, to shift to another Service mode screen, first quit that Service mode screen then enter another Service mode screen.

◆ Service Mode Map

Category	Mode	Procedure	Necessary When
Adjustment	Model Setting	Automatically start up when necessary	After replacing M/B or T/B
Adjustment	LD Power Adjustment	[ESC] + [CX] + [1] + [0]	After replacing M/B or Loader
Adjustment	CPRM ID Number/Data Setting	[ESC] + [STEREO]	After replacing M/B or HDD
Adjustment	Firmware Update	[REC STOP] + [OPEN/CLOSE]	After replacing M/B or T/B
Adjustment	Gracenote Database Update	[REC STOP] + [OPEN/CLOSE]	After replacing HDD
Adjustment	Video Adjustment for Specific Area	[ESC] + [CHP/TIM]	As needed
Adjustment	OSD Filter Setting	[ESC] + [DISP] + [DIG/ANA] x4	As needed
Diagnosis	Version Info, etc.	[ESC] + [DISP]	
Diagnosis	RF Level	[ESC] + [DISP] + [DIG/ANA]	
Diagnosis	Error Rate	[ESC] + [DISP] + [DIG/ANA] x2	
Diagnosis	HDD Info	[ESC] + [DISP] + [DIG/ANA] x3	
Diagnosis	Writer Maintenance Info	[ESC] + [DISP] + [2] + [DIG/ANA] x2 + [SEARCH]	
Diagnosis	LD Degradation Check	[ESC] + [DISP] + [2] + [DIG/ANA] x3 + [SEARCH]	
Diagnosis	DV Info	[ESC] + [DISP] + [3]	
Diagnosis	VR Recording Error Log	[ESC] + [DISP] + [4] + [DIG/ANA] x3	
Diagnosis	VR Playback Error Log	[ESC] + [DISP] + [5] + [DIG/ANA]	
Diagnosis	EPG Info	[ESC] + [DISP] + [7]	Europe model only
Diagnosis	AAC Info	[ESC] + [DISP] + [+10] + [1]	
Diagnosis	HDMI Info	[ESC] + [DISP] + [+10] x2 + [4]	
Diagnosis	Ethernet Info	[ESC] + [DISP] + [+10] x2 + [7]	
Diagnosis	HDD Check	[ESC] + [CX] + [0] + [1]	
Diagnosis	USB Check	[ESC] + <TIMER/REC>	
Diagnosis	DVD Aging Mode	<DVD> + [ESC] + [REP.B] + [PLAY]	
Diagnosis	HDD Aging Mode	<HDD> + [ESC] + [REP.B] + [PLAY]	

6.1 VERSION INFORMATION, ETC. (FIRST SCREEN)

[Purposes]

To check the versions of the system control computer, TUNER microcomputer, and firmware for the drive, simple measurement of the RF level for the U/V tuner, results of the simple error rate measurement, HDD information, and OSD Filter setting

[Tools to be used]

Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

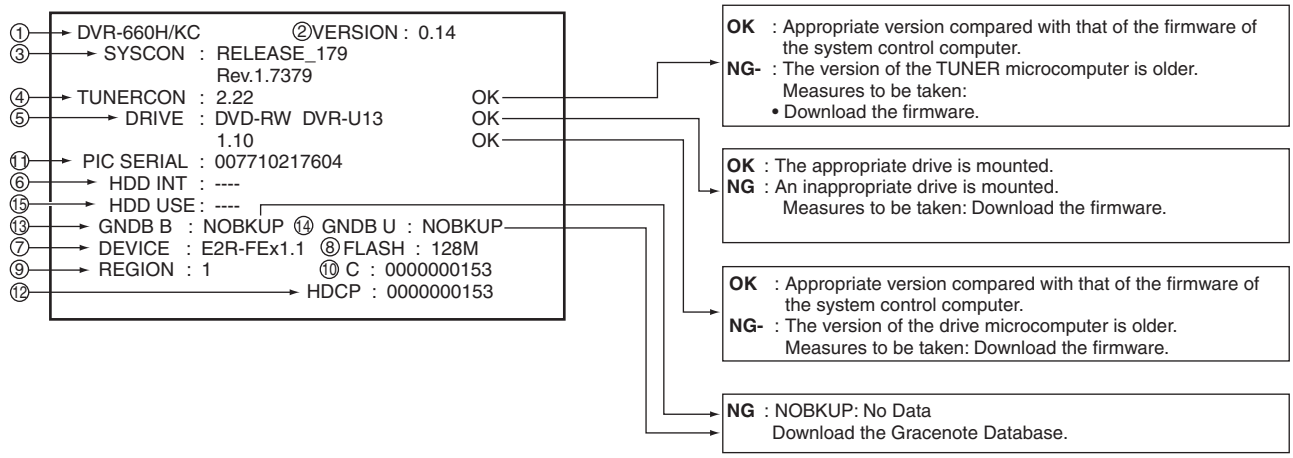
[How to enter] While the GUI screen is not displayed, press the ESC then DISP keys.

How to enter and change subscreens of the first screen: While the first screen is displayed, press the DIG/ANA key repeatedly until your desired subscreen is displayed. The subscreens change cyclically.

[How to quit] Press the ESC key.

[Description]

(1) First screen


① DVR-660H/KC ②VERSION : 0.14
③ SYSCON : RELEASE_179 Rev.1.7379
④ TUNERCON : 2.22 OK
⑤ DRIVE : DVD-RW DVR-U13 1.10 OK
⑪ PIC SERIAL : 007710217604
⑥ HDD INT : ----
⑮ HDD USE : ----
⑬ GNDB B : NOBKUP ⑭ GNDB U : NOBKUP
⑦ DEVICE : E2R-FEx1.1 ⑧ FLASH : 128M
⑨ REGION : 1 ⑩ C : 0000000153
⑫ HDCP : 0000000153
OK : Appropriate version compared with that of the firmware of the system control computer.
NG- : The version of the TUNER microcomputer is older.
Measures to be taken:
• Download the firmware.
OK : The appropriate drive is mounted.
NG : An inappropriate drive is mounted.
Measures to be taken: Download the firmware.
OK : Appropriate version compared with that of the firmware of the system control computer.
NG- : The version of the drive microcomputer is older.
Measures to be taken: Download the firmware.
NG : NOBKUP: No Data
Download the Gracenote Database.

① Model name/destination
② Version of the recorder software
③ Revision No. of the system-control computer software
④ Version No. of the tuner microcomputer
Result of the combination ckeck with system u-com
⑤ Information on the built-in drive
(Model name, version No., model type)
⑥ Physical capacity of the HDD
⑦ DEVICE information (EMMA type, ES No.)
⑧ FLASH ROM information
⑨ Region No.
⑩ CPRM information (CPRM key No.)
⑪ PICUP SERIAL No.
⑫ HDCP information (HDMI authentication key)
Same number as that for CPRM.
⑬ Gracenote Database information
⑭ Gracenote Database Update information
⑮ Operating capacity of the HDD

• Details on HDD data are described below:

HDD : WDC10234564 # 160

- Capacity of the HDD (unit: Gbytes)
- HDD identification error indication
- Name of manufacturer, part No. by manufacturer

If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

Table 1: HDD recognition status represented by the HDD data display

HDD identification conditions	Example of HDD data to be displayed	Remarks
Failure in physical identification of HDD (no connection, defective HDD, interface error)	Blank space	• Check the connection to the SATA connector. • Replace the SATA flexible cable and connector. • Replace the HDD. • Replace the resistor in the SATA communication line.
Physical identification of HDD possible, but not identified (CPRM ID is not input.)	WDC 10234564 # 160	• Input the CPRM ID.
Physical identification of HDD possible, HDD identified, but failure in logical formatting	WDC 10234564 ! 160	"!" represents an HDD-recognition error. • Initialize the HDD or erase all titles.
Physical identification of HDD possible, HDD identified, and correct logical formatting (HDD correctly identified)	WDC 10234564 160	

If an error indication in the HDD data does not disappear even after the above measures were taken, refer to another sheet of "HDD Service Mode."

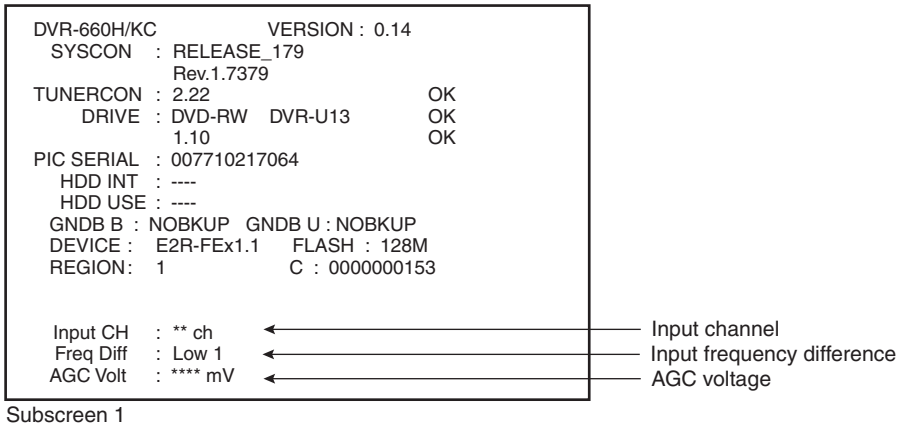
[1] Simple Diagnosis of the RF Level (Subscreen 1)

[Purposes] To check the RF signal of the U/V tuner by checking the input frequency difference and AGC voltage in this debug mode

[How to enter] While the User Setting display is displayed, press the ESC, DISP, then DIG/ANA keys, in that order.

[How to quit] Press the ESC key.

[Description]


DVR-660H/KC VERSION : 0.14
SYSCON : RELEASE_179
Rev.1.7379
TUNERCON : 2.22 OK
DRIVE : DVD-RW DVR-U13 OK
1.10 OK
PIC SERIAL : 007710217064
HDD INT : ----
HDD USE : ----
GNDB B : NOBKUP GNDB U : NOBKUP
DEVICE : E2R-FEx1.1 FLASH : 128M
REGION: 1 C : 0000000153
Input CH : ** ch
Freq Diff : Low 1
AGC Volt : **** mV
Input channel
Input frequency difference
AGC voltage

Subscreen 1

1) Frequency Difference (Freq Diff)

How much tuning is off is monitored, as shown below:

Input Frequency	Display
Faraway	High 7
High (within 200kHz)	High 1~5
Just Tune	Center
Low (within 200kHz)	Low 1~5
Low (over 200kHz)	Low 7

2) AGC voltage (AGC Volt)

The gain controlled by the tuner is monitored to infer the input electric field intensity.
(The accuracy of inference differs depending on the product.)

	Field Intensity	AGC VOL
Intense field area (Clear image)	70 dBμ or more	3300 mV or more
Less intense field area (Noise may be generated.)	50 dBμ or more 70 dBμ or less	3100 - 3300 mV
Weak field area (Much noise. EPG/VPS/PDC sometimes cannot be obtained.)	30 dBμ or more 50 dBμ or less	2600 - 3100 mV
Very weak field area (Image damaged. EPG/VPS/PDC cannot be obtained.)	30 dBμ or less	2600 mV or less (It is unable to discriminate.)

Tips:

For good reception, the field intensity must be 50 dBμ or more (AGC Volt 3100 mV or more).
For accurate measurement, use a field intensity meter.

[2] Simple Error Rate Measurement (Subscreen 2)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key twice, in that order.
- While subscreen 1 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Measurement procedures]

① Display subscreen 2.
② Load the Test disc (GGV1025).
③ Judge the results of the error rate measurement by referring to Table 1.

ERR RATE : *.*e-*

Subscreen 2

[Tips]

During VR mode playback, the average value of the past 10 VOBUs is displayed. During DVD-Video or Video mode playback, the average value of the past 256 sectors is displayed.
During VR mode playback, the speed ratio of the drive (/: normal, no indication: double speed) is also displayed.

Table 1: Thresholds when determining OK or Error

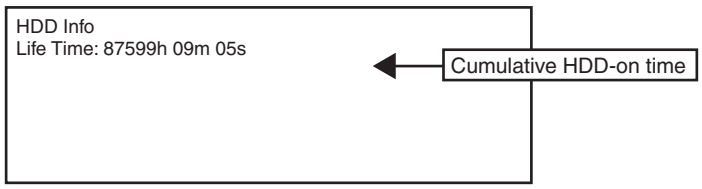
Disc type	Recording mode	Finalized or not finalized	Reference value
DVD-VIDEO	-	-	8.0×10^{-4}
DVD-R	Video mode	Finalized	3.3×10^{-3}
		Not finalized	3.3×10^{-3}
DVD-RW	Video mode	Finalized	3.3×10^{-3}
		Not finalized	3.3×10^{-3}

[3] HDD Information (Subscreen 3)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key three times, in that order.
- While subscreen 2 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Mode description]



Subscreen 3

[Tips]

- **How the data on cumulative HDD-on time are processed in memory**

  Storage place:
  FLASH ROM

  Timing of referring to the data on cumulative HDD-on time:
  When the power is turned on, fails, the FLASH ROM is referred to.

  Timing of updating the data on cumulative HDD-on time:
  While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the Backup SRAM. When the power is turned off, the data are stored in the FLASH ROM.

- **How to clear the data on cumulative HDD-on time**

  FLASH ROM:
  When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the ESC then the STEREO keys).

  Notes:
  - The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
  - The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

[4] OSD Filter Setting (Subscreen 4)

[Purpose] Depending on the monitor used, the character flicker on the OSD may stand out.
If a system, such as character flicker, appears on the monitor, select the filter response.

[Tools to be used]

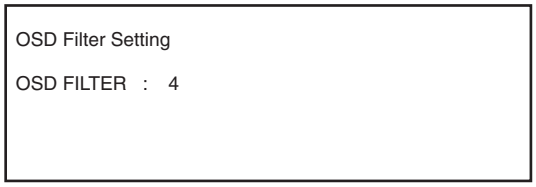
Remote control unit for servicing
(GGF1381)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key four times, in that order.
- While subscreen 3 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Setting procedures]

① Display subscreen 4.
② Select the setting from the key operation table.



Subscreen 4

[Tips]

As the setting value becomes greater, jitter is reduced on a CRT display. However, as lines for characters appear thick, complex characters may become difficult to read. On the contrary, as the setting value becomes smaller, jitter increases on a CRT display. However, as lines for characters become sharper, complex characters become more legible.

Note: Use the remote control unit for servicing.
Note: A new setting becomes active as soon as it is made. As a new setting is stored in nonvolatile memory, it will be retrieved when the unit it turned on the next time.
Note: After the factory-preset values are downloaded, the setting value for the OSD Filter will be the default value (4).

[(Table 2) Key operation of OSD Filter setting]

Key	Operation	Setting value	Remarks
[Rev x 3], [SPEED+] [x 3 Fwd], [SPEED-]	Changing the setting value for the OSD Filter	0 - 4 (Default value: 4)	[Rev x 3], [SPEED+] : The setting value increases by 1. [x 3 Fwd], [SPEED-] : The setting value decreases by 1.
[CLEAR]	The setting value is reset to default.	–	
[ESC]	To exit the OSD Filter Setting and clear the screen (Appears the tuner screen.)	–	–

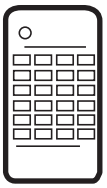
6.2 ATA/ATAPI DEBUG SCREEN (SECOND SCREEN)

[Purposes]

To be used as a rough guide to judge whether the pickup unit is all right or not

- Dirt on the pickup lens
- Degradation of the laser diodes for reading CDs and reading/writing to/from DVDs

[Tools to be used]



Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

[How to enter]

- While the User Operation display is displayed, press the ESC, DISP, then 2 keys, in that order.
- While any subscreen of the second screen is displayed, press the DIG/ANA key repeatedly. The subscreens change cyclically.

[How to quit] Press the ESC key.

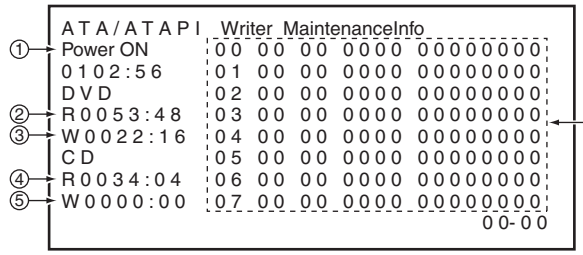
[1] Writer Maintenance Information of ATA/ATAPI DEBUG OSD (Subscreen 3)

[How to enter]

- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key twice, in that order.

[How to quit] Press the ESC key.

[Procedures] Update the display by pressing the SEARCH key while subscreen 3 is displayed.



Error log for the Writer (Not for Service)

① Power-on time/cumulative power-on time
② Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
③ Duration of emission of the LD for DVD-W/DVD while writing
④ Duration of emission of the LD for CD-R/CD while reading
⑤ Duration of emission of the LD for CD-W/CD while writing (This function is not used for this model.)

② If the total hours of duration of emission of the laser diode (LD) for DVDs while reading ② and that of emission of the LD for DVDs while writing ③ exceed 4,700 hours, the LDs may be degraded. Perform an LD degradation judgment, using subscreen 4.

[Tips]

MTTF hours for each LD
DVD: 4,700 hours
CD: 11,000 hours
The ATA/ATAPI Writer Maintenance Info is obtained each time the power is turned on. Thereafter, the data on the subscreen is updated each time the SEARCH key is pressed (the updating command is sent) while this subscreen is displayed. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.
[Note on lighting time data for each LD]
Since data on lighting time of each laser diode (LD) are stored in the flash ROM on the MAIN Assy, after the MAIN Assy is replaced, the data will be cleared. However, after the LOADER Assy is replaced, data on lighting time of each LD will be retained in the MAIN Assy. Therefore, before either the MAIN Assy or LOADER Assy is to be replaced, it is recommended that you write down the lighting time data.

[2] LD Degration Judgment of ATA/ATAPI DEBUG OSD (Subscreen 4)

[How to enter]
- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key three times, in that order.

[How to quit] Press the ESC key.

[Notes]
- For correct measurement of items ① to ④ indicated in the display below, leave the unit at room temperature (25˚C) for a while before turning it on, and do not load a disc.
- For RF measurement (item ⑤), it is recommended to use the Test disc (GGV1025).
  As the RF level differs depending on the characteristics of the pickup from product to product, it cannot be used for judging degradation of the LD. Use the RF level as a rough guide to know the difference between before and after lens cleaning.

[Procedures] To update the value for each item, press the SEARCH key while subscreen 4 is displayed.
For details on each item and the conditions of updating the values, see Table 2 below.

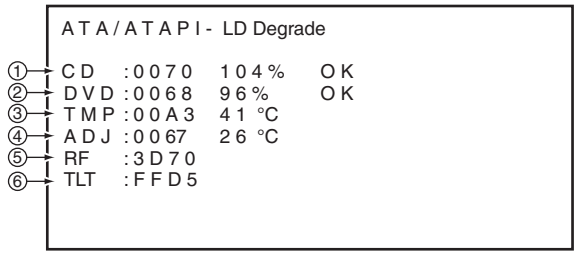


Table 2: Description of each item and conditions for updating data

No.	Item	Description	Conditions for updating by pressing the SEARCH key
①	CD	Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
②	DVD	Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
③	TMP	Current temperature inside the Writer	No disc inserted in the disc tray
④	ADJ	Temperature (approx. 25°C) inside the Writer during adjustment	No disc inserted in the disc tray
⑤	RF	RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal)	During playback of disc medium (GGV1025)
⑥	TLT	Writer adjustment data for straight (non-HDD) model (FFFF is diplayed when the writer is not adjusted.)	No condition

If the results of degradation of the LDs for CDs or DVDs are NG, replace the drive.

6.3 VR-RECORDING-RELATED ERROR LOGS (FOURTH SCREEN)

[Purposes]

To roughly determine in which category shown below a symptom that is difficult to reproduce belongs.
For details on the categories of error logs displayed, see "Table 1: Description of VR-recording-related errors."

- Errors related to the MPEG Encoder
- Errors related to the drive system
- Errors related to copying
- Errors related to others
- Errors related to the HDD

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[How to enter]

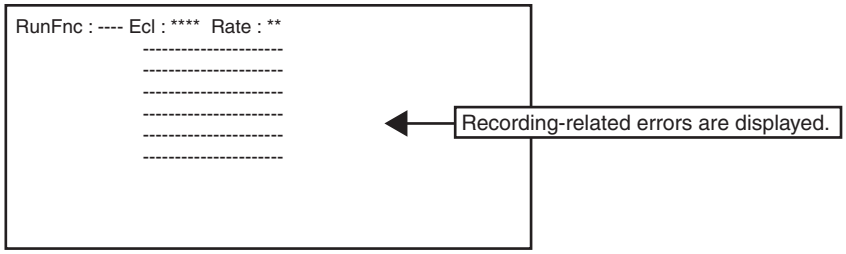
- While the User Operation display is displayed, press the ESC, DISP, then 4 keys, in that order.
- While any subscreen of the fourth screen is displayed, press the DIG/ANA key repeatedly.
  The subscreens change cyclically.

[How to quit] Press the ESC key.

[Description of each subscreen]

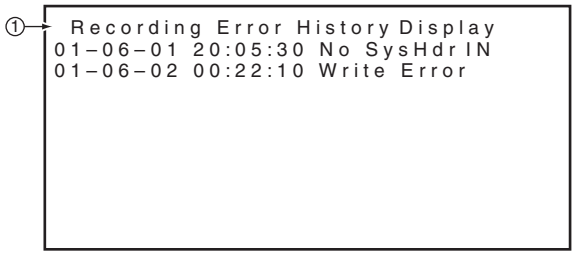
(1) VR-Recording-Related Error Logs (Subscreen 1)

- Errors related to recording are displayed on the lines "Rec Err:," as shown below.
  For details on errors, see "Table 1: Description of VR-recording-related errors."



(2) Subscreen 2 and 3 (These subscreens are not for service use.)

(3) VR-Recording-Related Error Logs (Subscreen 4)



① There are two error-log screens, on which up to 9 logs per screen are displayed.
(generation time [year-month-day, hour:minute:second], error data in simplified description)

[Tips]

- The two error-log screens can be switched by pressing the SPEED+ or SPEED- key.
- For details on error messages, see Table 1 "Description of VR-recording-related errors".

(4) Subscreen 5 to 12 (These subscreens are not for service use.)

[1] Description of VR-Recording-Related Errors

Any error message marked with * is displayed "RecErr : ---------" on the Subscreen 1 of the fourth screen.

● Error Related to MPEG Encoder

Error Message	Description	Cause
AVEnc Hang	AVEncoder failed	Defective engine or software-related problem
IN Encode *	Changes cannot be made in the process of encoding	
No SysHdr IN	System packet is not input periodically	Defective engine or software-related problem
Stm Start NG	Failure to start encoding (reasons not clear)	Defective engine or software-related problem
Stream NG	Inappropriate input stream data	Defective engine or software-related problem
Strm Start NG	Timeout waiting for system packet input at the beginning	Defective engine or software-related problem

● Error Related to Drive System

In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

Error Message	Description	Cause
Bdr Cls NG	Close Border failed	Defective disc
Bdr Opn NG	Open Border failed	Defective disc
BUF Overflow	Overflow of the Stream Buffer	Software-related problem
CLS Rzon Fail	Video Mode Close Rzone failure	Defective disc
Drive Hang	The Drive is hung up.	Defective disc or drive
Drv Err	General error of the drive	Defective disc or drive
Drv Hard Err	Abnormality in the drive hardware or firmware	Defective disc or drive
Drv TimeOut	Timeout waiting for drive operation	Defective disc or drive
Fail Repair	Repair failed	
Format NG	Format failed	Defective disc
May Be V mode	Although TMP_VMGI is not written, it may be Video Mode disc.	
Mech No Res	No response from the mechanical-control computer	Defective disc or drive
MKB Invalid	MKB reading error	Defective disc
NWA Exhaust	NWA surpassed and impossible to use	Defective disc
OPC NG	OPC failed	Defective disc
PCA Full	PCA has been used up.	
Read Err	Reading failed, ECC failed, etc.	Defective disc
ReadOnly DISC *	Because some data are invalid, data cannot be written	
RMA Full	RMA has been used up.	
Rzn Cls NG	Close RZone failed	Defective disc
Rzn Rpr NG	Repair RZone failed	Defective disc
Rzn Rsv NG	Reserve RZone failed	Defective disc
TMP-VMG WrErr	Video Mode TMP VMGI Write Error	Defective disc
VTSI_B Wr Err	Video Mode VTSI BUP Write Error	Defective disc
VTSI_B2 Wr Err	Video Mode VTSI BUP Write Error (After Layer Change)	Defective disc
VTSI Wr Err	Video Mode VTSI Write Error	Defective disc
VTSI2 Wr Err	Video Mode VTSI Write Error (After Layer Change)	Defective disc
Write Err	The Drive failed to write and could not be recovered.	Defective disc
May Be PVR	May be +VR disc, but no RSAT	
V Final fail	Abnormal process occurred when finalizing Video mode	Software-related problem
DLVR trace NG	Close Rzone failed at dual layer disc	Defective disc

RSAT : Reserved Space Allocation Table

● Error Related to Dubbing

Error Message	Description	Cause
H2D CP SomeNG	Other NG HDD -> DVD copy	
Mem get NG	Video Mode Copy Memory has not ensured.	
Strm TransfNG	Video Mode Copy Stream Transfer NG	
Tracon Trn NG	Video Mode Copy Tracon transfer has not been completed.	
VC Cell Max	Maximum number for Video Mode copy Cells exceeded	
VC CopyCancel	Video Mode Copy Copy Cancel	
VC FlushC NG	Video Mode Copy Flush Cache NG	
VC HDD C Err	Obtaining Video Mode Copy HDD Cell information failed	
VC HDD Inf NG	No information on Video Mode Copy HDD	
VC HDD Info NG	Format failed	
VC Idling NG	Video Mode Copy idling NG	
VC Pck Anl NG	Analizing Video Mode Copy Pack failed	

● Error Related to Dubbing (Continued)

Error Message	Description	Cause
VC Transf Stp	Video Mode Copy Transfer Stop	
VC TSO BLK NG	Video Mode Copy TSO Block transfer has not been completed.	
VC VOBU SizeE	Video Mode Copy VOBU Size NG	
V Rsv RzoneNG	Video Mode Copy Reserve Rzone failed	Defective disc
V2H APP FL NG	VR → HDD APP FLG is OFF	
V2H Aud Ch NG	VR → HDD Audio Channel NG	
V2H Aud Md NG	VR → HDD Audio Mode NG	
V2H Aud Stm N	VR → HDD Audio Stream number NG	
V2H SRC Prot	VR → HDD copy prohibited material	
V2H Unknown	VR → HDD other NG	
V2H VOBU TMNG	VR → HDD Play back time of each VOBU is different	
V2H V Reso NG	VR → HDD Video resolution NG	
H2D CP NoSpac	HDD → DVD insufficient free space for copy	
H2D TO HDDRD	HDD → DVD (VR) TimeOut at HDD playing side	
H2D TO SPRO	HDD → DVD (VR) TimeOut at internal processing	
H2D TO DVDWR	HDD → DVD (VR) TimeOut at HDD recording side	
C2H LOG (XXX)	HDD CAM → HDD operation log (XXX is a process code.)	
C2H ERR (XXX)	HDD CAM → HDD NG (XXX is a process code.)	

● Other Errors

Error Message	Description	Cause
Abort *	Cancellation	
Already open	Extension file is already opened.	
BK BATT Down	Backup RAM data has been erased.	
BK FSYS Dirty	Backup RAM data has not been written on the File Sys.	
BUG	Some bugs	
BusReset Done	Bus Reset has been executed.	
Cell Close NG	Cell Close NG	
CPRM IC NG	Inappropriate CPRM IC	Defective engine
Dir Depth Err	Tree of Directory is too deep.	
Disc Full	No further data can be written because the disc is full.	
DRAM CLR Err	Video Mode DRAM (Stream Buffer) Clear failure	
DRAM NG	Abnormality in access to the Work DRAM	
Drive Destroy	The drive has crashed.	Defective engine, drive, or HDD
EncModul Hang	Encoder routine is hung up.	Defective engine or software-related problem
F Alrdy Exst	Extension file is already exist.	
File cancel	Extension file is canceled.	
FileNot Exist	Extension file is not exist.	
Format Excec	Formatting has been executed.	
Invalid Disc *	The disc cannot be recognized.	Problem in the logical structure of the disc
Invalid Param *	Invalid parameter	
Invalid TMVMG	Invalid TMP_VMGI content	Problem in the logical structure of the disc
Invalid UDF *	Invalid UDF content	Problem in the logical structure of the disc
Invalid VMG *	Invalid VMG content	Problem in the logical structure of the disc
Invalid VTSI	VTSI information of +VR is unusual.	Problem in the logical structure of the disc
Irr Action *	Incorrect action	
MKB REVOKED	Error in gaining data	
Limit Over *	Standard maximum limit exceeded	
No More Info *	No more space in the internal work-management area	Software-related problem
No Permission *	No permission to write to the disc	
No Video	No video input (not locked)	
Now Busy *	In the process of the emergency processing	
NV Pck DMA Er	Inappropriate NaviPack DMA	
NV Pck MK Err	Error in creating NaviPack	
Ourob Strm NG	Inappropriate stream data to the Ouroboros input	
Over Heat	Abnormal temperatute	
PARAM NO ACCP	Recording parameter is not matched.	
Process Over	Process is overfull.	
Protect Src *	Source to be recorded is copy-protected.	
Rec Pause *	No operation permitted during recording pause	
Relocation Do	VR-recording data was relocated	

● Other Errors (continued)

Error Message	Description	Cause
Repair Excec	Repairing has been executed.	
Something *	Undetermined error	
SRAM NG	Abnormality in access to the backup work SRAM	
Status NG *	Abnormality in change of statuses	
SW PVR	Switch to +VR playback process	
SW Vpb mode *	Switching to video playback routine is required.	
SW Vrec mode *	Switching to video recording routine is required.	
Unmatch Stamp *	Impossible to modify because of nonmatching time stamp	Problem in the logical structure of the disc
VBR-SRAM NG	Abnormality in VBR SRAM	
V Categ ID NG	Inappropriate Category ID	
V Cate Inf NG	Inappropriate Category information	
V Ext MAX Ovr	Count Max exceeded	
V ExtToo Big	The extension file is too large.	
V Ext TY NG	Type NG	
Virgin DISC	Virgin Disc	
VOBU Info NG	Inappropriate VOBU information	
WaterMark Det	Watermark detected	
WM Cracked	WM Cracked	
Param Short	Editing Error (Clear A-B)	
Invalid VRMI	Information of +VR is NG. (VRMI)	Problem in the logical structure of the disc
Heap Mem NG	Failure in securing the necessary amount of memory	Soft-related problem
Heap Mem RETY	Reattempting to secure the necessary amount of memory	

● Error Related to HDD

Error Message	Description	Cause
Do nothing	Do nothing for demand.	
ESFSYS CORUPT	easyfsys error	
ESFSYS INIT	easyfsys initializing	
HDD Buff High	High-level process executed for the HDD Buffer	
HDD DEF DONE	HDD deflag finished	
HDD DEF ERR	HDD deflag error	
HDD Destroy	HDD is not recognized on the bus.	Defective HDD, engine
HDD INFO BAD	Incorrect HDD Management Data	Defective HDD or software-related problem
HDD Initialize	HDD initialized	
HDD IRRG POFF	Abnormal power off	
HDD MBR NG	Inconsistent MBR data	Defective HDD
HDDReset Done	HDD Reset executed	
HDD ROMSUM NG	Rom-code check sum NG	
HDD SIG NG	Inconsistent HDD Management Data Magic	Defective HDD
HDD SMART NG	Inappropriate HDD SMART	Defective HDD
HDD Trans Err	DMA error in HDD copy transfer	
HDD unauthor	Inconsistent HDD serial No.	
HDD Zero WR	MBR was written	
Task No Activ	Task has not been activated.	
TT Rec Over	Title recording time full	
HDD WRONG TGT	Invalid HDD target No. is directed.	
extHDD Ignore	External HDD is dismounted.	
HDD PFile NG	Program file installed in HDD is NG.	
HDD DEL TT	Delete the title by HDD recovery.	
HDD DEL PL	Delete the dubbing list by HDD recovery.	
HDD DEL OC TT	Delete the title moving on the way inside HDD	
HDD Aging NG	Error generated in HDD Test mode	
HDD TFD INIT	Gracenote Database deleted	
HDD DWNLD NG	Error generated while Gracenote Database was being downloaded	
HDD TFD WR NG	File development of Gracenote Database failed.	
HDD TFD CL NG	File deletion of Gracenote Database failed.	
HDD TFD NON	Gracenote Database not downloaded	
HDD CDDB NG	Problem in Gracenote Database	
GN API NG	File operation of Gracenote Database failed.	

● No Error

Error Message	Description	
Non Err *	Normal	

Abbreviations:

ECC = 4 byte Code for Error Correction
UDF = Universal Disc Format
PCA = Power Calibration Area
OPC = Optical Power Control
NWA = Next Writable Address
VMG = Video Manager
RMA = Recording Management Area
MKB = Media Key Block
TMP_VMGI = Temporary Video Manager Information
Border = from Lead-in to Lead-out
RSAT = Reserved Space Allocation Table

6.4 VR-PLAYBACK-RELATED ERROR LOGS (FIFTH SCREEN)

[Purposes]

It can be inferred that an operation that caused an error in the drive was performed or that a failure occurred in the drive if any of the error logs shown in "Table 2: Description of VR-playback-related errors" is recorded on this screen.

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[How to enter]

- While the User Operation display is displayed, press the [ESC], [DISP], then [5] keys, in that order.
- While any subscreen of the fifth screen is displayed, press the [DIG/ANA] key repeatedly. The subscreens change cyclically.

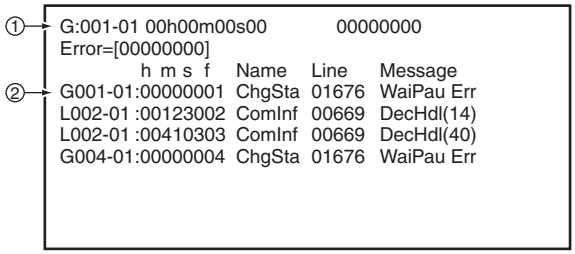
[How to quit] Press the [ESC] key.

[Description of each subscreen]

(1) Subscreen 1 (This subscreen is not for service use.)

(2) VR-Playback Error Logs (Subscreen 2)

- For details on error messages, see Table 2 "Description of VR-playback-related errors".
- If a VR-playback-related error is generated, a problem in data reading from the disc may be suspected. (The possibility of a problem on the drive side is high.)



① Information on display position
Original / Play list (G/L), Title No., Chapter No. [X:XXX-XX]
Display time (hour, minute, second & frame) [XXhXXmXXsXX]
Logic address for playback (ID) [XXXXXXXX]
Number of entries to error log [XXXXXXXX]

② Error message log
Original / Play list (G/L), Title No., Time of occurrence (min & sec) [XXX:XXXX]
Location of occurrence (this data is used for development), Name: Name of module where the error occurred, Line: Number of line where error occurred
Playback-system errors that occurred in 13 times of playback in past [XXX:XXXXXXX]
* For details of error information, refer to the Appendix Table 1.
* If information on errors which occurred on days earlier than the current day is contained on the screen, the information that follows the information which are displayed with "^" between “Time of occurrence”, “Name”, “Line” and “Message” indicates the errors that occurred on the current day.

[1] Description of VR-Playback-Related Errors

Error Message	Details of error
AudioPB Err	Audio initialization error
WaiPau Err	Pause was disabled though tried. (Pause-wait timeout)
CC_OS_ERR	CC output processing error
Tr:NullBlk	No valid data in the first block
Tr:NaviErr	Navigation pack error
Tr:ReadErr	Data read error
Dec:PicDisp	Not played up to final PTS
Dec:Size	horizontal/vertical_size in sequence header is 0 or above 720 × 576.
Dec:PicTyp	picture_coding_type in picture header is neither of the I, P, nor B picture type.
Dec:Struct	picture_structure in picture coding extension is neither top/bottom_field or frame picture.
Dec:Syntax	Header size is insufficient or does not match with markerbit.
Dec:NoHead	No picture header exists between picture data.
Dec:SqErr	Detected sequence_error_code.
Dec:Refrenc	In Field structure, top_field and bottom_field of temporal_reference in picture header does not match.
Dec:Profile	profile_and_level_indication in sequence extension header is exceeding MP@ML.
DecHdl(**)	Decoder command execution timeout. (**) is replaced by No. of command which was to be executed. The Nos. and names of commands are as follows. /* DECODER system command */ 0 HANDLER_DECODER_INIT, 1 HANDLER_DECODER_INIT_STARTUP, 2 HANDLER_DECODER_INIT_PLAY, 3 HANDLER_DECODER_INIT_RTR_PLAY, 4 HANDLER_DECODER_INIT_AUDIO, 5 HANDLER_DECODER_EXIT, 6 HANDLER_DECODER_BLACK_BACK, 7 HANDLER_DECODER_SET_DISP_FMT, 8 HANDLER_DECODER_SET_ASPECT_MODE, 9 HANDLER_DECODER_DISP_BITRATE, /* DVD command */ 10 HANDLER_DEC_DVD_VIDEO_PLAY, 11 HANDLER_DEC_DVD_VIDEO_PLAY_LIST, 12 HANDLER_DEC_DVD_AUDIO_PLAY, 13 HANDLER_DEC_DVD_STOP, 14 HANDLER_DEC_DVD_PAUSE, 15 HANDLER_DEC_DVD_PAUSE_STILL_MODE, 16 HANDLER_DEC_DVD_STEP, 17 HANDLER_DEC_DVD_REWSTEP, 18 HANDLER_DEC_DVD_PAUSE_OFF, 19 HANDLER_DEC_DVD_FF, 20 HANDLER_DEC_DVD_REW, 21 HANDLER_DEC_DVD_SLOW, 22 HANDLER_DEC_DVD_REWSLOW, 23 HANDLER_DEC_DVD_SCAN_OFF, 24 HANDLER_DEC_DVD_SLOW_OFF, 25 HANDLER_DEC_DVD_REWSLOW_OFF, 26 HANDLER_DEC_DVD_REWSKIP_TO_REWSLOW, 27 HANDLER_DEC_DVD_REWPAUSE, 28 HANDLER_DEC_DVD_PLAY_LIST_END_CHECK, 29 HANDLER_DEC_DVD_SET_CAPTION_SW_OFF, 30 HANDLER_DEC_DVD_SET_CAPTION_SW_ON, 31 HANDLER_DEC_DVD_REWPAUSE_TO_REWSLOW,

Error Message	Details of error
	32 HANDLER_DEC_DVD_REGIST_TRICK_CALLBACK, 33 HANDLER_DEC_DVD_TRICK_DATA_END, 34 HANDLER_DEC_DVD_AUDIO_STOP, /* management information */ 35 HANDLER_DEC_INIT_NV_PCK, 36 HANDLER_DEC_INIT_RDI_PCK, 37 HANDLER_DEC_READ_NV_PCK_POINT, 38 HANDLER_DEC_READ_RDI_PCK_POINT, 39 HANDLER_DEC_READ_STC, 40 HANDLER_DEC_READ_PTS, 41 HANDLER_DEC_HLI_ENABLE, 42 HANDLER_DEC_COMMAND_PLAY, 43 HANDLER_DEC_COMMAND_PAUSE, 44 HANDLER_DEC_COMMAND_RSLOW_VOBU_STOP, 45 HANDLER_DEC_INIT_VIDEO_MODE, 46 HANDLER_DEC_SET_VIDEO_MODE, 47 HANDLER_DEC_CHECK_VIDEO_OUTPUT, 48 HANDLER_DEC_CHECK_VIDEO_ERROR, 49 HANDLER_DEC_DISPLAY_SUBPICTURE, 50 HANDLER_DEC_SET_SUBPICTURE_PALLET, 51 HANDLER_DEC_IPB_REVERSE, 52 HANDLER_DEC_SET_AUDIO_SYNC, 53 HANDLER_DEC_COMPULSION_OUTPUT_SUBPICTURE, 54 HANDLER_DEC_CLEAR_LAST_NV_PCK_POINT, 55 HANDLER_DEC_CLEAR_LAST_RDI_PCK_POINT, 56 HANDLER_DEC_GET_PICTURE_PARAM, 57 HANDLER_DEC_CHECK_BUFFER_EMPTY, 58 HANDLER_DEC_CHECK_TRICK_END, 59 HANDLER_DEC_READ_VCD_PTS, /* still picture */ 60 HANDLER_DEC_DVD_STILL_NOTIFY, 61 HANDLER_DEC_DVD_STILL_PLAY, 62 HANDLER_DEC_DVD_STILL_FF, 63 HANDLER_DEC_DVD_STILL_FF_OFF, 64 HANDLER_DEC_DVD_STILL_SLOW, 65 HANDLER_DEC_DVD_STILL_SLOW_OFF, 66 HANDLER_DEC_DVD_STILL_PAUSE, 67 HANDLER_DEC_DVD_STILL_PAUSE_OFF, 68 HANDLER_DEC_DVD_STILL_DATA, 69 HANDLER_DEC_DVD_STILL_GET_COUNT, 70 HANDLER_DEC_DVD_RDI_NOTIFY, /* closed caption */ 71 HANDLER_DEC_CAPTION_NOTIFY, 72 HANDLER_DEC_CAPTION_BUFFER_RESET, 73 HANDLER_DEC_CAPTION_SET_INPUT_USER_DATA, 74 HANDLER_DEC_CAPTION_SET_INPUT_FRAME_DATA, 75 HANDLER_DEC_CAPTION_SEND_FRAME_DATA, 76 HANDLER_DEC_FRAME_CHANGE_NOTIFY

6.5 DV SERVICE MODE

[1] DV Debug

[Purpose]

To check whether communication between a DV device and the unit is normal when a DV device is connected

[Tools to be used]

Remote control unit for servicing (GGF1381)

- DV device
- DV cable

[How to enter] Press the ESC , DISP then 3 keys, in that order.

[How to quit] Press the ESC key.

[Mode description]

① **(DV/1394) Init:**OK **AV**:02 **DV**:01

② [**Recorder**] **GUID:**00E0360006100001 IRM
③ **iPCR**:C03F0000
④ [**DV**] **GUID:**0080880303480E96
⑤ **VN:**VICTOR **MN:**GR-D50K
⑥ **TM:**C3 **TS:**75 **CT:**32 **WP:**01 **PS:**FF **OS**:00
⑦ **CA:**A000002020 **MD:**VTR
⑧ [**DVdecode:**Yes] **LineSys:**525-60
⑨ **TC:**00h20m35s **RD:**02/02/05 **RT:**10h34m50s
⑩ **ASPECT:**4:3 **CGMS:**000000 **APSTB:**00 **DEC:**525-60
⑪ **SF:**32KHz **QU:**12bit **AMODE:**4) Stereo

Boldface alphanumerics : Fixed indications
Nonboldface alphanumerics : Variable indications

No.	Item	Description	Remarks
①	Init	Whether the initialization of 1394 LINK and DV decoder inside EMMA2RFEX has been completed (OK) or not (NG)	
	AV	Number of AV devices recognizing connection	Identification number of AV devices including D-VHS, Digital Tuner, etc other than DV devices.
	DV	Number of DV devices recognizing connection	If the number does not become 01 even if a DV device is connected, identification of that device fails.
②	GUID	GUID set in ConfigROM of the unit	GUID : Global Unique ID (Specific ID for DV devices) If the unit is ROOT (IRM), IRM is displayed at the side position of GUID display.

No.	Item	Description	Remarks
③	iPCR	iPCR value of the unit	
④	GUID	GUID set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. If the connected DV device is ROOT (IRM), IRM is displayed at the side position of GUID display.
⑤	VN	Vendor name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.)
	MN	Model name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the model name may not be set in ConfigROM.)
⑥	TM	Transport Mode data obtained from the DV device	Data are displayed only if one DV device is identified.
	TS	Transport State data obtained from the DV device	
	CT	Cassette Type data obtained from the DV device	
	WP	Write-protection data obtained from the DV device	
	PS	Power-state data obtained from the DV device	
	OS	Output signal mode data obtained from the DV device	
⑦	CA	Connect AV data obtained from the DV device	Data are displayed only if one DV device is identified.
	MD	DV device mode	Camera or VTR is displayed only if one DV device is identified.
⑧	[DVdecode:XXX]	Whether Yes (in the process of requesting DV input) or No is indicated in XXX	Normally, Yes is indicated only when CH is set to DV.
	LineSys	Input Line System setting	
⑨	TC	Time-code data of the DVdecode Stream, or response data of the Time Code command	Stream time-code data are obtained when the tape is played in forward direction. Otherwise, time-code data are obtained through an AV/C command.
	RD	Rec Date of DVdecode Stream	
	RT	Rec Time of DVdecode Stream	
⑩	ASPECT	Aspect Ratio of DVdecode Stream	
	CGMS	CGMS of DVdecode Stream (from left to right, CGMS data of bits 5-4: Audio ch 2, bits 3-2: Audio ch 1, and bits 1-0: Video)	*CGMS (Copy Generation Management System): The two-digit codes added to broadcast programs represent the following: 00: Copy freely, 10: Once copy, 11: Never copy
	APSTB	APS trigger bit of DVdecode stream	
	DEC	With/without DVdecode stream input	With input: Signal type (525-60, 625-50, 1125-60, 1250-50, or Invalid) is indicated, Without input: "No" is indicated.
⑪	SF	Sampling Frequency of DVdecode Stream	If SF is 44 kHz, it is considered that 44.1-kHz audio is input, and sound is muted on the unit.
	QU	QUANTIZATION of DVdecode Stream	
	AMODE	AUDIO MODE of DVdecode Stream	

[2] Simple Diagnosis of DV

Symptoms		Location in the Debug Screen	Items to be Checked, and Conditions	Possible causes
No operation for DV input	1	DV ①	Check the Init indication: OK: Initialization of 1394 LINK and DV decoder inside EMMA2RFEX appropriately completed. NG: Initialization of 1394 LINK and DV decoder inside EMMA2RFEX has not been completed properly.	Defective IC1001(EMMA2RFEX)/ IC5103(1394PHY), improper connection between IC1001 / IC5103, defective soldering, defective power supply, etc.
	2	DV ①	Check the number of DV devices when one DV device is connected to the recorder: 01 : The connected DV device is correctly identified. Other than 01 : The connected DV device is not correctly identified.	Defective DV terminals, improper connection of the DV-terminal board, defective IC5103(1394PHY), defective cables, an IEEE 1394 device other than the DV device connected.
No picture nor sound for DV input	1	DV ⑧	Check of DV decoding when the recorder channel is set to DV: Yes: The recorder is in the process of a DV input operation No: The recorder is not executing a DV input operation	Defective IC1001(EMMA2RFEX), defective soldering, defective power supply, etc.
	2	DV ⑩	Check DEC: 525-60: An NTSC DV signal is input from the DV device. 625-50: A PAL DV signal is input from the DV device. No: No DV signal is input from the DV device.	Defective DV terminals, improper connection of the DV-terminal board, defective source device defective IC1001(EMMA2RFEX), IC5103(1394PHY) **Note:** As to a model having the Input Line System setting, if the setting and the actual input signal system do not match, no picture appears.
DV input recording impossible	1	DV ⑩	Check CGMS:	Recording cannot be performed for a copy-protected source.
No sound for DV input	1	DV ⑪	Check SF: 32 khz: An audio signal with 32-kHz sampling frequency is being input. 48 khz: An audio signal with 48-kHz sampling frequency is being input. 44 khz: An audio signal with 44.1-kHz sampling frequency is being input.	An audio signal with 44.1-kHz sampling frequency is muted.

6.6 HDMI SERVICE MODE

[Purposes]

To check the statuses of the connected HDMI devices.

[Tool to be used]

Remote control unit for servicing (GGF1381)

- HDMI device
- HDMI cable

[How to enter] • Press the [ESC], [DISP] then [+10], [+10], [4] keys, in that order.

Note: Do not press any key on the remote control unit supplied with the unit or for servicing while the HDMI debug screen is displayed.

[How to quit] Press the [ESC] key.

[Description of the mode]

1. HDMI MAIN information screen (First screen)

```
00 [HDMI]                                1/6
01  Connect:***   Reso :*********    Audio:***
02  DevType:****  Color:**********   APath:*****
03  TMDS   :***   HDCP :** : **      Fs   :***
                            SType:
[Video Check]
  Pic_Asp    :
  Active_Asp :
[Copyright Control Check]
  ACP_Type:        (Actual send:      )
  ChSts0:   ChSts1:   (C: , L: )
[Digital Tuner]
  HDMI Out: AC3 32kHz
  LL SPDIF: AC3 32kHz   DAC: 32kHz
```

(*1) [Tips]
Because all the data on connection and authenti--cation are canceled once the function of the connected HDMI device is set to a position other than HDMI, all the debugging data in Table 1 are deleted.

Table 1: Description of the items on the HDMI main information screen

Line	Item	Description	Remark
1	Connect	Connection status of the HDMI device	See Table 2.
	Reso	Output resolution	See Table 3.
	Audio	HDMI audio output status	See Table 4.
2	DevType	Type of connected device	See Table 5.
	Color	Output color	See Table 6.
3	TMDS	TMDS (video stream) signal output status	See Table 7.
	HDCP	HDCP Authentication status	See Table 8.
	Fs	Output audio Fs	See Table 9.

Table 2: Connection status of the HDMI device

Indication	Description
ON	Connected
HtPlg	Not connected but Hot plug is ON.
OFF	Not connected

Table 3: Output resolution

Indication	Description
480i NTSC	720x480i NTSC
480p NTSC	720x480p NTSC
720p NTSC	1280x720p NTSC
1080i NTSC	1920x1080i NTSC
1080p NTSC	1920x1080p NTSC
576i PAL	720x576i PAL
576p PAL	720x576p PAL
720p PAL	1280x720p PAL
1080i PAL	1920x1080i PAL
1080p PAL	1920x1080p PAL
----------	TMDS Off

[Description of the Main screen] (Continued)

Table 4: HDMI audio output status

Indication	Description
OFF	Output: Off
ON	Output: On

When the unit is connected to DVI device (refer to Table 5), the Audio is not outputted.

Table 5: Type of the connected device

Indication	Description
------	Not connected
HDMI	It has been confirmed that an HDMI device supporting HDCP is connected.
DVI	It has been confirmed that a DVI device supporting HDCP is connected.

When the unit is connected to device with no HDCP support, this display is "HDMI-" or "DVI-".

Table 6: Output color

Indication	Description
YCbCr4:2:2	Component 12 bits (YCbCr4:2:2)
YCbCr4:4:4	Component (YCbCr4:4:4)
RGB(0-255)	RGB full range (0-255)
RGB(16-235)	RGB (16-235)
----------	TMDS Off

Table 7: TMDS signal output status

Indication	Description
OFF	Output: Off
ON	Output: On

Table 8: HDCP

Left side : HDCP Authentication Status

Indication	Description
--	If an device supporting HDCP is connected, HDCP authentication is in progress.
OK	HDCP authentication succeeded.

Refer to this item only when HDMI or DVI is displayed for the item for the type of the connected device (Table 5).
If OK is not displayed although HDMI or DVI is displayed, it means that the HDCP authentication failed.

Right side : Check Revocation list

Indication	Description
--	Checking that the connected device (all downstream devices) is not registered to the Revocation list, or so.
OK	The connected device (all downstream devices) is not registered to the Revocation list.

Refer to this item only when HDMI or DVI is displayed for the item for the type of the connected device (Table 5).
When there is also no valid SRM (include Revocation list), "--" is displayed here.

Table 9: Fs

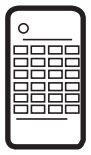
Indication	Description
32k	32kHz
44k	44.1kHz
48k	48kHz
96k	96kHz
96k/2	48kHz (original data of 96kHz is down-sampled.)
---	Audio Off

6.7 AGING MODE

[Purposes]

If symptoms regarding recording/ playback of discs and/or the HDD that your customer claimed are difficult to reproduce, they can be reproduced with a long-time test in Aging mode.

[Tools to be used]



Remote control unit for servicing (GGF1381)

Remote control unit supplied with the unit

Commercially available, recordable DVD-R/+R and DVD-RW/+RW/ -RAM discs

[Notes]

- When aging for the DVD-RW/+RW/-RAM and HDD is executed, all recorded data on them will be erased.
- Commands from the remote control unit are accepted during Aging mode.
- If Aging mode is quit using the ESC key, indications on the FL display will return to normal display.
- Cancel timer settings before entering Aging mode.
- Set the recording rate beforehand. It cannot be changed during Aging mode.

[How to enter]

① Press the DVD key to switch to DVD.
② Load a recordable disc.
③ Select the input function of a recordable source.
④ After disc detection is performed, press the ESC then REP.B, and then PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during initialization: The unit stops after initialization is finished. (aging for ±RW/-RAM only)
- If the tray is being opened/closed: The unit stops after the tray is opened/closed.

[Description of operation] **Aging for the DVD-RW/DVD-R**

Aging for the DVD-RW/+RW/-RAM	Aging for the DVD-R/+R
During Aging mode, the following operations are repeated in the order shown below. ①The tray opens. ②The tray closes. ③Initialization ④Recording for 60 minutes ⑤Playback for 45 minutes <DVD-RW> The initialization process in step 3 follows the setting specified in "Disc setting--Basic--Auto initialization of a DVD-RW." <DVD+RW> The initialization process in step 3 is the same as that described in "Disc setting--Initialization--Initialization of a DVD+RW." <DVD-RAM> In the initialization process in step 3, physical formatting is performed, if required. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD.	During Aging mode, the following operations are repeated in the order shown below. ①The tray opens. ②The tray closes. ③Recording for 1 minute ④Recording pause for 6 minutes ⑤Recording stops. ⑥Playback for 1 minute ⑦Playback pause for 6 minutes ⑧Playback stops. **Note:** A continuous test of the above operations is possible for approximately 23 hours. After ② the tray closes, disc detection is performed, <DVD-R> In step 2, if the disc is judged to have recorded up to 99 titles, the operation stops at that point. <DVD+R> If the disc is judged to have recorded up to 49 titles, the operation stops at that point. On the FL display, the number of loops is retained. On the OSD display, the error indication is retained. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD. **Note:** Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging.

[Aging for the HDD]

[How to enter]

① Press the HDD key to switch to HDD.
② Press the ESC key then the REP.B, and then the PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during erasure of all memory data from the HDD, the unit stops after all memory data have been erased.

[Description of operation]

During Aging mode, the following operations are repeated in the order shown below.

① Erasure of all the memory data from the HDD
② Recording for 60 minutes
③ Playback for 60 minutes

* Take caution as all recorded data of the HDD is deleted.

[Tips]

During Aging, the number of loops is indicated on the FL display, as shown below.

[AGING 0001]

If an error is generated, the aging operation stops.

Note:

Indications on the FL display are retained, and this information is also retained as an OSD.

6.8 USB CHECK MODE

[Purposes]

As this unit is provided with two USB ports, operation checks of these ports are possible by connecting them (loop connection).

[Tools to be used]

USB cable (GGD1445)

Remote control unit supplied with the unit

Remote control unit for servicing (GGF1381)

[How to enter this mode]

1. Connect Connector A (at the front panel) and Connector B (at the front panel), using a USB cable.
2. Enter USB Check mode.
   Press the ESC key on the remote control unit for servicing then press the TIMER REC key on the remote control unit supplied with this unit.

[How to quit]

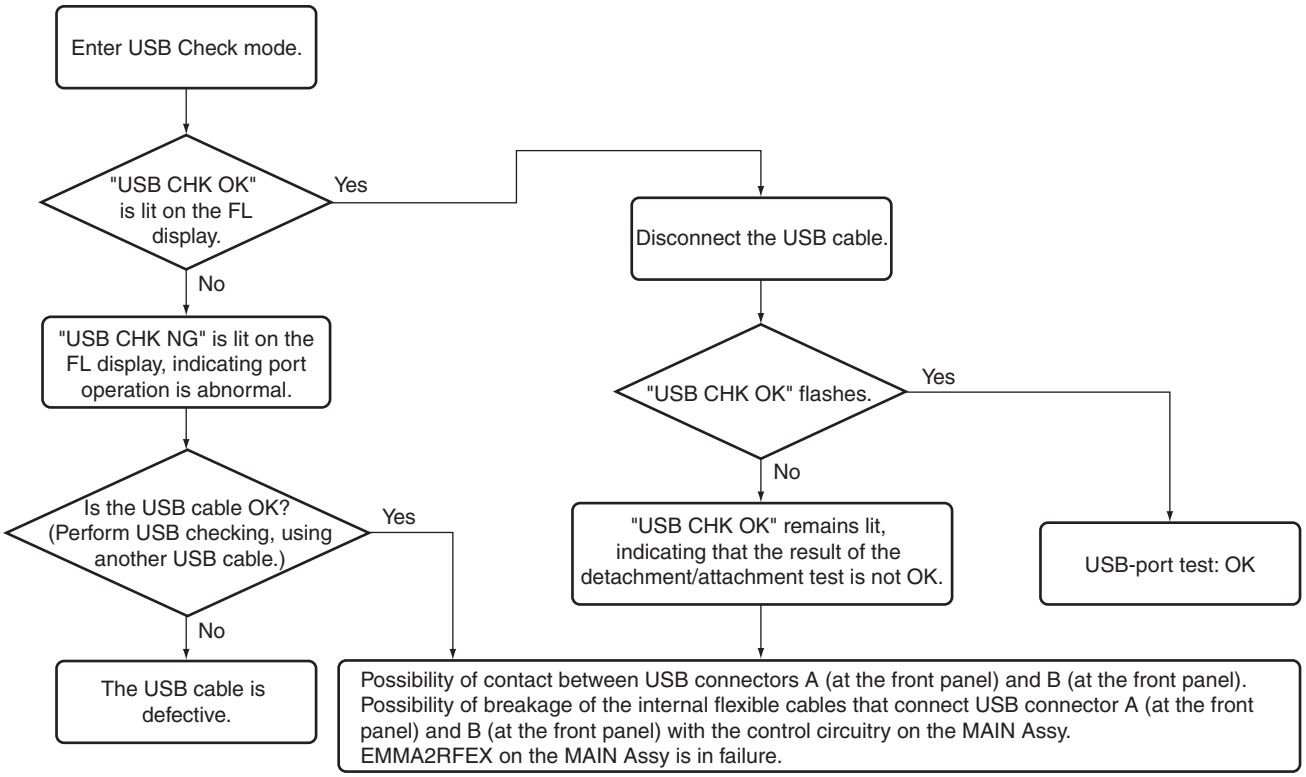
To quit while the ports are operating properly ("USB CHK OK" is lit.): Press the ESC key or the clear key.
To quit while port operation is abnormal: Turn the power off then back on.

[Procedures]

1. Check the indication on the FL display.
   When the two ports are operating properly: "USB CHK OK" is lit.
   When port operation is abnormal: "USB CHK NG" is lit.

2. When "USB CHK OK" is lit in Step 1, disconnect the USB cable in order to perform the detachment/attachment test.
   The indication on the FL display will change, as follows:
   If the result is OK: "USB CHK OK" will flash.
   If the result is not OK: "USB CHK OK" will remain lit.

[Troubleshooting]


Enter USB Check mode.
"USB CHK OK" is lit on the FL display.
Yes
No
Disconnect the USB cable.
"USB CHK NG" is lit on the FL display, indicating port operation is abnormal.
"USB CHK OK" flashes.
Yes
No
Is the USB cable OK? (Perform USB checking, using another USB cable.)
Yes
No
"USB CHK OK" remains lit, indicating that the result of the detachment/attachment test is not OK.
USB-port test: OK
The USB cable is defective.
Possibility of contact between USB connectors A (at the front panel) and B (at the front panel).
Possibility of breakage of the internal flexible cables that connect USB connector A (at the front panel) and B (at the front panel) with the control circuitry on the MAIN Assy.
EMMA2RFEX on the MAIN Assy is in failure.

6.9 HDD CHECK MODE

[1] How to Diagnose Failure of the Hard Disc Drive (HDD)

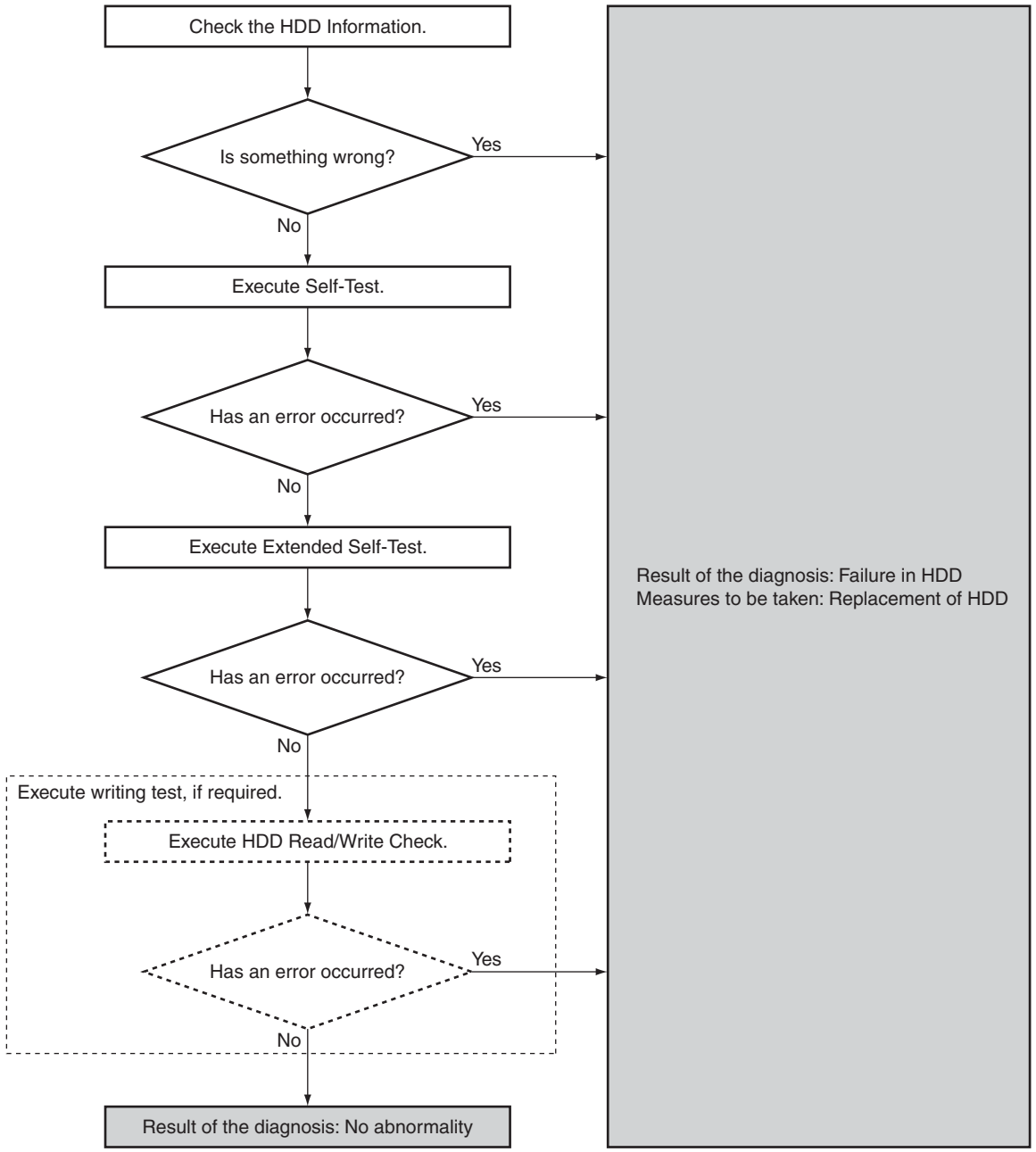
Purpose:
With use of the HDD-diagnostic program contained in the product itself, physical errors on the HDD can be diagnosed. Use this program to diagnose whether or not the HDD is in failure when one of the symptoms indicated below is recognized, or when a failure in the HDD is suspected.

Symptoms of failure in HDD:
(1) HDD Error
(2) Failure in HDD recording or playback
(3) HDD not recognized

Tool to be used:
Remote control unit for servicing (GGF1381)

[2] Flow of HDD Diagnosis

(1) Flowchart of HDD diagnosis



(2) Overview of the diagnosis items

HDD Information	This is a display for checking the HDD information, such as the model name of the HDD, continuous power-on time, authentication status, and results of the diagnosis on the end of service life.
SELF TEST	This is a simplified diagnosis for the HDD. A serious failure in the HDD can be detected with this test. Time required for testing: Approx. 60 sec.
EXTENDED SELF TEST	This is a reading test across all sectors of the HDD. Data recorded on the HDD will not be erased, because no writing operation is performed. Time required for testing: Approx. 2.5 hours/500 GB 1.3 hours/250 GB
HDD Read / Write Check	This is a writing, reading, and comparing test across all sectors of the HDD. **All data recorded on the HDD will be erased**, because all the data are to be overwritten. **Be sure to obtain your client's consent beforehand.** Time required for testing: Approx. 15 hours/500 GB 8 hours/250 GB You must redownload Gracenote DB data, because Gracenote DB data are to be over written too. (DVR-660H-K, 560-K only)

[3] How to Start or Terminate the Diagnostic Program

How to start/terminate the diagnostic program

Use the remote control unit for servicing.

How to start: Press the "ESC", "CX", "0", and "1" keys simultaneously.

How to terminate: Press the "ESC" key.

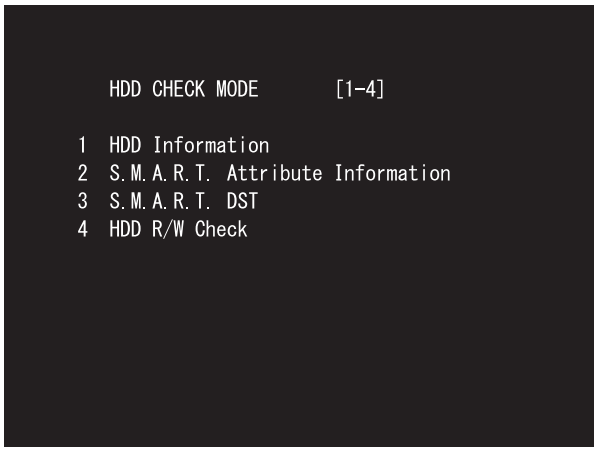
Do NOT perform other operations on the unit while the HDD diagnosis is in progress. Although the diagnostic program is designed to function independently from the unit's functions, an operation on the unit during a diagnosis may cause a malfunction.

The status of the unit recommended during diagnosis is as follows: All stop, no timer recording (including auto-recording), and Input selection to L1-L3.

[4] Diagnosis Procedures

1.Display the menu on the screen.

The menu indicated below is displayed when the diagnostic program is started. To enter each mode, press the corresponding key "1"-"4" on the remote control unit for servicing.



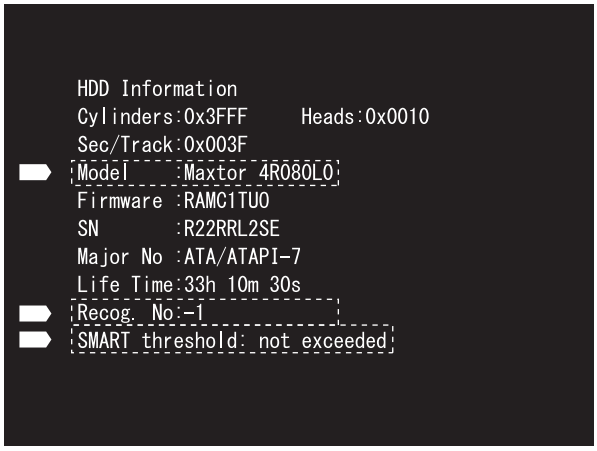
Tests to be executed

1. HDD Information:
   Check of the HDD information
2. S.M.A.R.T. DST:
   Executing a simplified test or a reading test of all data
3. HDD R/W Check:
   Executing a writing/reading test of all data. All data on the HDD will be erased if this test is executed.

Note: "2. S.M.A.R.T. Attribute . . ." is not to be used.

2.Check the HDD information.

Press the "1" key on the remote control unit for servicing. Check the following data:
Model: Is the correct model name of the HDD displayed?
Recog. No: Is a positive value displayed?
SMART threshold: Is "not exceeded" displayed?



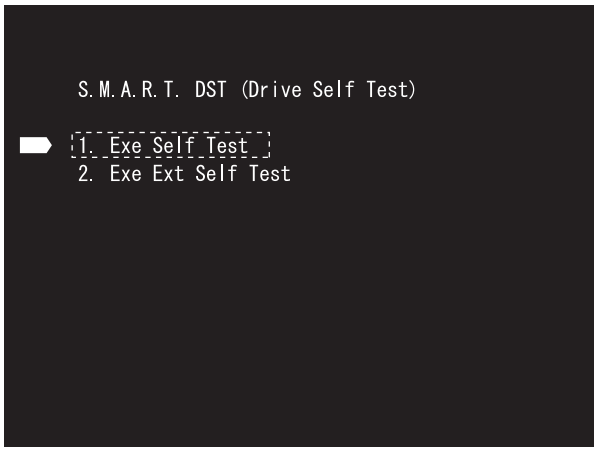
Detailed description

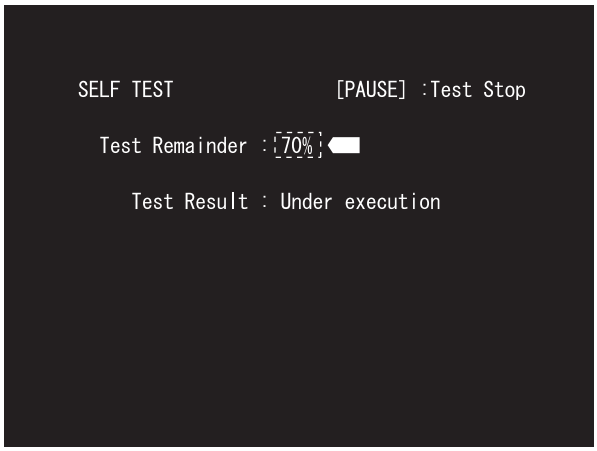
1. Model:
   For the correct model name, refer to the display of the unit.
2. Recog. No:
   Positive value: The HDD has been authenticated.
   Negative value: The HDD has not been authenticated.
3. SMART threshold:
   exceeded: The HDD has come to the end or near the end of its service life.
   not exceeded: The HDD has not reached the end of its service life.

To return to the menu screen, press the "Clear" key.

3.Execute Self-Test.

Press the "3" key on the remote control unit for servicing while the menu screen is displayed.
When the following screen is displayed, press the "1" key to start the Self-Test.





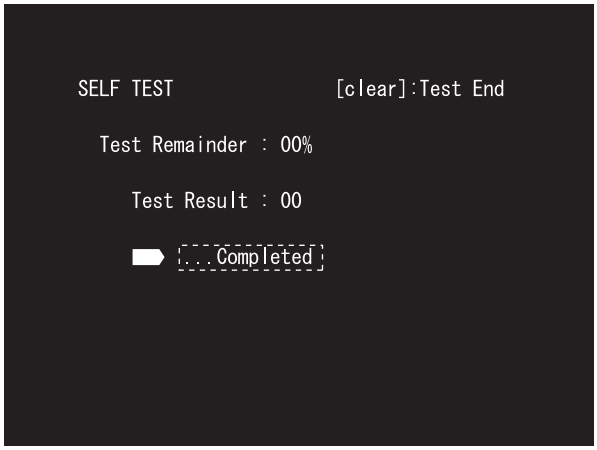
The progress of the test is displayed on the screen. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%.
Check whether or not an error has occurred after the test is finished.

Diagnosis results

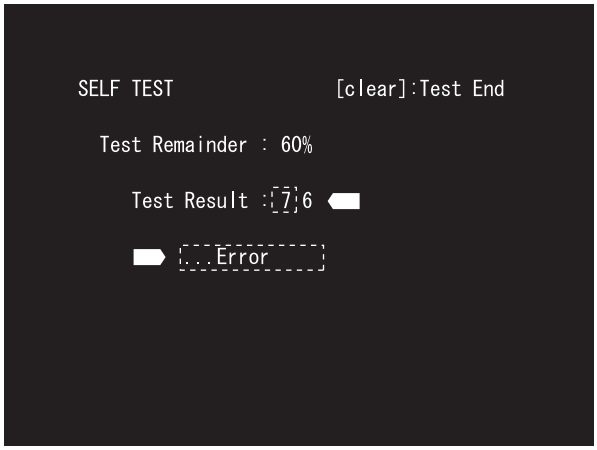
- Without an error: ". . . Completed" is displayed.
  Then, proceed to the Extended Self-Test.
- With an error: ". . . Error" is displayed. Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error

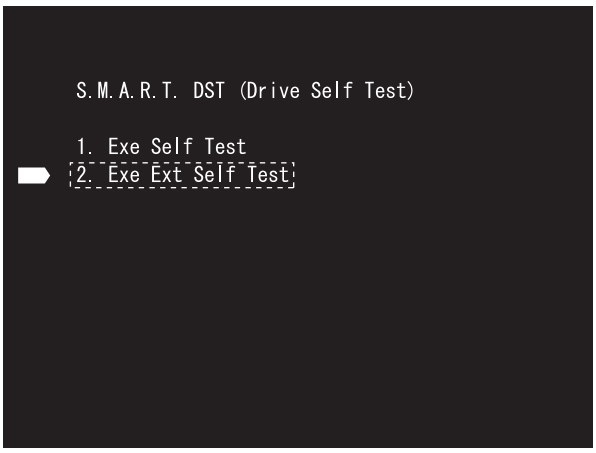


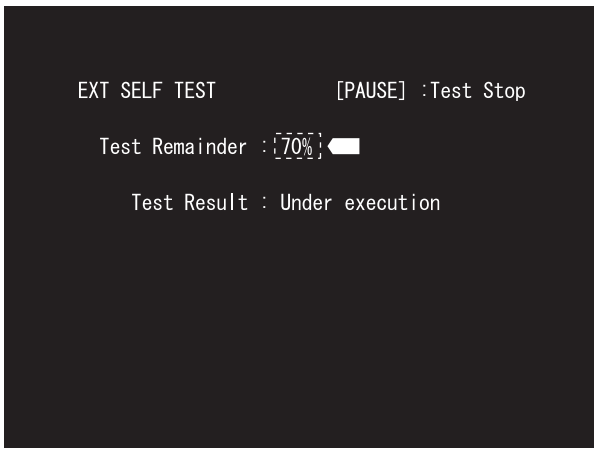
Example: With an error



To return to the menu screen, press the "Clear" key.

4.Execute the Ext (Extended) Self-Test.





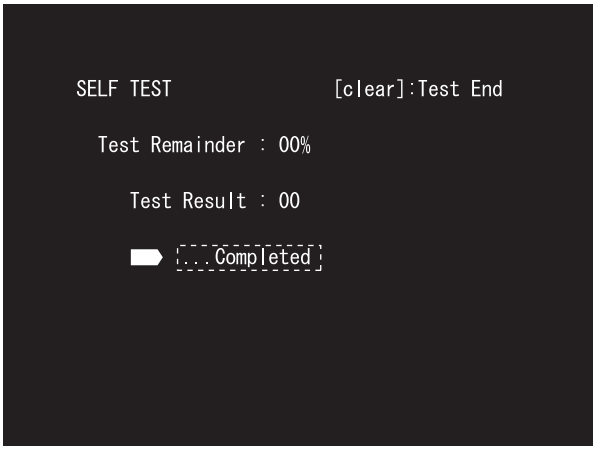
Press the "3" key while the menu screen is displayed, then the "2" key on the remote control unit for servicing. The Extended Self-Test starts. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%. Check whether or not an error has occurred after the test is finished.

Diagnosis results

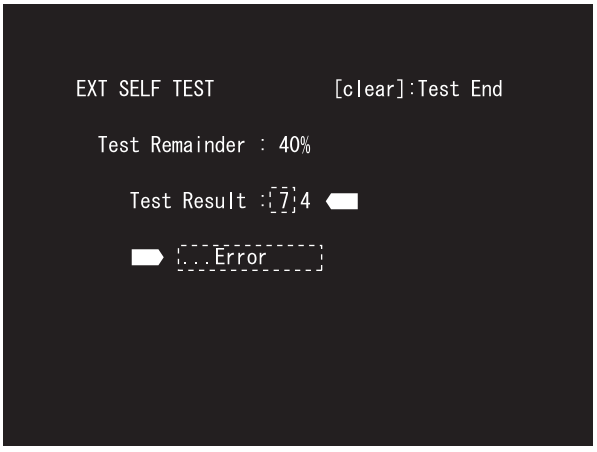
- Without an error: ". . . Completed" is displayed.
  If no error occurs up until this stage, HDD operations are normal except for writing operations.
  If the unit has a failure in HDD playback, a block other than the HDD may be in failure.
  If the unit's failure is in HDD recording, however, the next HDD Read/Write Check must be executed to test writing operations.
- With an error: ". . . Error" is displayed.
  Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Ext Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error



Example: With an error

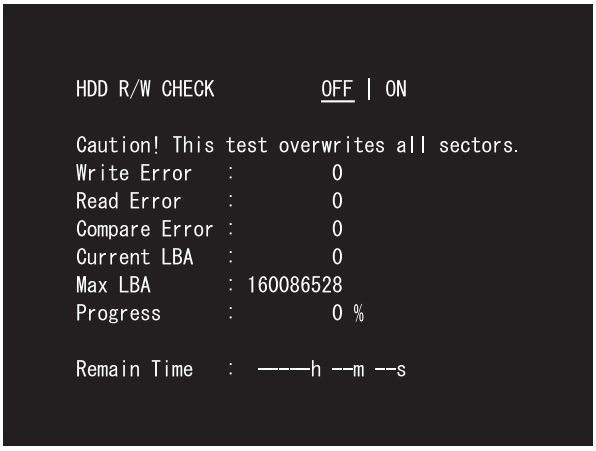


To return to the menu screen, press the "Clear" key.

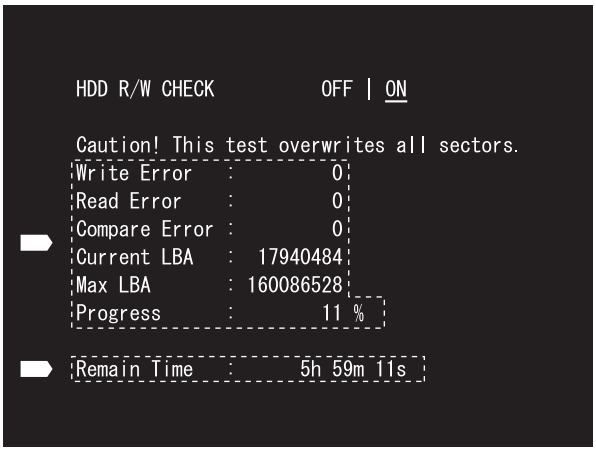
5.Execute the HDD R/W Check.

Before executing this test, **be sure to obtain your client's consent for erasure of HDD data**.
Press the "4" key while the menu screen is displayed then the "SKIP ▶▶I" key to start the HDD R/W Check.

NOTE
Be sure to press the "SKIP I◀◀" key to complete this test after the progress reaches 100% or cancel this test (OFF) while it's in progress.
Do not press "ESC" key without pressing "SKIP I◀◀" key, otherwise this test is not completed and it causes unexpected errors on the HDD.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 0
Max LBA : 160086528
Progress : 0 %
Remain Time : ----h --m --s

The display on the left indicates the progress of the test.
The percentage of the test progress is displayed on the screen, and the test is finished when the percentage reaches 100%.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 17940484
Max LBA : 160086528
Progress : 11 %
Remain Time : 5h 59m 11s

Detailed description on each item on the screen
- Write Error: Number of write errors
- Read Error: Number of read errors
- Compare Error: Number of comparison errors
- Current LBA: The address during testing
- Max LBA: Highest address number of the HDD
- Progress: Percentage of test progress (%)
- Remain Time: Estimated time required for finishing the test across all sectors.
  Estimated time: 15 hours/500 GB
  8 hours/250 GB

Diagnosis results
- If no error occurs in any of the Write/Read/Compare items, the HDD is in normal condition and is not required to be replaced. A block other than the HDD is in failure.
- If any error occurs, the HDD must be replaced.

When the status is OFF
To terminate the diagnostic program, press the "ESC" key.

When the status is ON
The status becomes OFF when the test is interrupted by pressing the "SKIP I◀◀" key or when "Progress" reaches 100%.

6.10 DIAGNOSTIC PROCEDURES WHEN AAC DECODING HAS FAILED

[1] AAC information

[Purpose]

AAC Error Information

[How to Enter]

Press [ESC], [DISP], [+10], then [1], in that order. The first screen is displayed.
To switch screens, press [DIG/ANA].

First screen

```
[CD Media Debug Information]

Total Track:**(DA:** ROM:**)  Session:******

Application:
   External:—  (Note 1)
```

Note 1: Startup status (OK/NG) of the external decoder
If the external decoder starts up normally, OK is displayed. If it fails to start up, NG is displayed. With NG, playback of any AAC file will fail.

Second screen: Information on playback of MUSIC files

```
[MUSIC] [*ch  ****Kbps  **KHz-**Bit]  SRC:****
HEAD:[ AAC-xxxx(xxxx) FS:xx(xx) STSS:[xxx x]      ]

CurStat:*********   TgtStat:*********
ERROR; ******** (                                 )
       (Note 2) (                                 )
ADDRESS; NOW  :0x00000000   TOP  :0x00000000
         START:0x00000000   END  :0x00000000
         ENTRY:0x00000000
TIME ;   NOW  :**.**.**   TOTAL:**.**.**

FMODE; AREA:[*** *]  MODE:*****  ERR:**** CPR:****

FILE ;  CurNo:****_**  TgtNo:****_**   Total:****
        Name :
FOLDER; CurNo:****(****)  TgtNo:****(****)  Total:****
        Name :
```

Note 2:
ERROR information

If any error code is indicated in parentheses, a playback error has been generated. Each error code is displayed in its fixed position. (The duration of error-code indication is short, because when an error is generated, playback of the next file is automatically attempted.)

Description of error codes

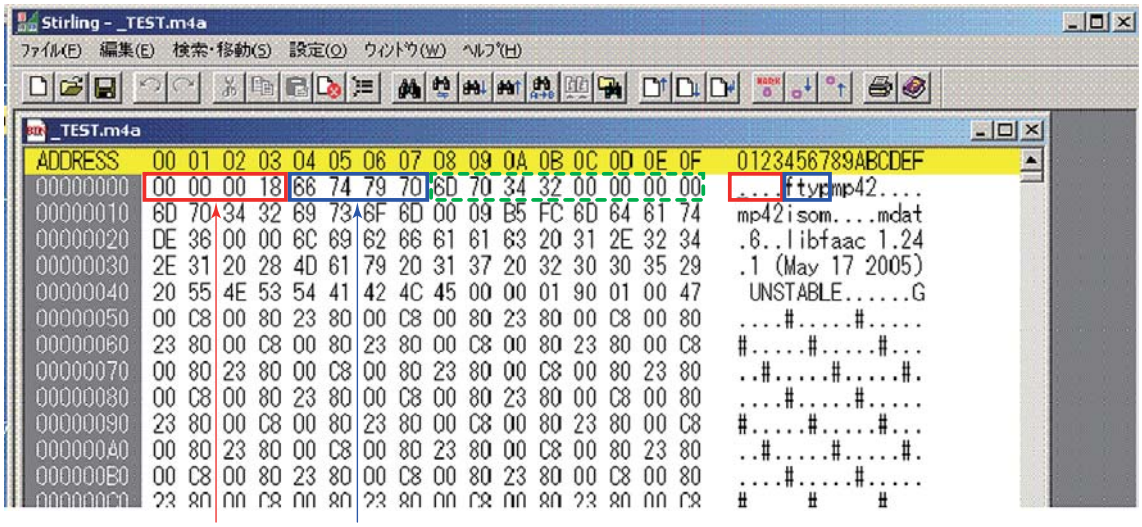
FMT : The file cannot be recognized as having an MP4 file format.
DEC : Although the file is recognized as playable, the decoder could not decode the data of the file correctly.
CH : The number of channels is not supported.
QNT : The quantization bit rate is not supported.
BPS : The bit rate is not supported.
FS : The sampling frequency is not supported.
BOX : The file format is judged to be not supported upon analysis of the MP4 file.
PRF : The Advanced Audio Codec (AAC) is judged to be not playable.
MEM : The system failed to secure the amount of memory required for playback.

Note 2:
ERROR information
If any error code is indicated in parentheses, a playback error has been generated. Each error code is displayed in its fixed position. (The duration of error-code indication is short, because when an error is generated, playback of the next file is automatically attempted.)

Description of error codes
FMT : The file cannot be recognized as having an MP4 file format.
DEC : Although the file is recognized as playable, the decoder could not decode the data of the file correctly.
CH : The number of channels is not supported.
QNT : The quantization bit rate is not supported.
BPS : The bit rate is not supported.
FS : The sampling frequency is not supported.
BOX : The file format is judged to be not supported upon analysis of the MP4 file.
PRF : The Advanced Audio Codec (AAC) is judged to be not playable.
MEM : The system failed to secure the amount of memory required for playback.

Possible causes for errors and how to diagnose
Possible causes for an FMT error
Possible cause 1: Impossible box size for the first box of an MP4 format file
How to diagnose: Check the binary data of the file with which an FMT error was generated. Consider the first 4 bytes at the beginning of the file as the box size and check if the size is 0 or a value that exceeds the file size.
If the box size is 1, consider the 8 bytes from the 8th byte from the beginning as the box size. Check if the size is 0 or a value that exceeds the file size.

How to check the box size:
For checking the binary data of the file, use the Binary Editor of the PC tools.
The figure below shows the binary data of an MPEG4 file:



With this file, the first box is an "ftyp" box, and its size is 0x18 bytes (the figure in the frame in red).
In a case of an FMT error, the first box size is 0 or a value that exceeds the file size (impossible value for the MPEG4 file format).
If the box size is 1, the data that are framed in dotted green lines in the above figure are treated as the box size.

Possible cause 2: Failure in data reading during file analysis
How to diagnose: Check the ATA error log on the Debug screen.

How to check the ATA error log:
Display the ATA error log page by pressing [ESC], [DISP], [2], then [DIG/ANA], in that order.
The first 4 digits denote date, and the next 6 digits denote time. Check if the date and time match those when an error was generated during AAC playback.
You can switch between Writer and HDD data, using [FRM/TIM]. Switch according to the type of medium being played back.
For USB, there is no log for reading errors.

Possible causes for a DEC error
Possible cause 1: An error notification was issued by the decoder, because there was an error in the stream.
How to diagnose: Play back the file on the PC to check if an error is generated.

Possible cause 2: Data reading failed while the data were being transmitted to the decoder.
How to diagnose: Check the ATA error log on the Debug screen.
* See "How to check the ATA error log," above.

A "CH" error does not occur during AAC playback.

Possible causes for a QNT error
Possible cause 1: The encoding method is not 16-bit quantization.
How to diagnose: Check the number of quantization bits, using a PC analysis tool.

Possible cause 2: After data reading failed, an erroneous number of quantization bits was obtained.
How to diagnose: Check the ATA error log on the Debug screen.
* See "How to check the ATA error log," above.

Possible causes for a BPS error
Possible cause 1: The average bit rate exceeded 480 Kbps.
How to diagnose: Check the average bit rate, using a PC analysis tool.

Possible cause 2: After data reading failed, an erroneous average bit rate was obtained.
How to diagnose: Check the ATA error log on the Debug screen.
* See "How to check the ATA error log," above.

Possible causes for an FS error
Possible cause 1: The sampling frequency was less than 8 KHz or greater than 96 KHz.
How to diagnose: Check the sampling frequency, using a PC analysis tool.

Possible cause 2: After data reading failed, an erroneous sampling frequency was obtained.
How to diagnose: Check the ATA error log on the Debug screen.
* See "How to check the ATA error log," above.

Possible causes for a BOX error
Possible cause 1: An impossible box size was obtained during box analysis.
How to diagnose: Check the box size, using a PC analysis tool.

Possible cause 2: Data necessary for playback could not be obtained.
How to diagnose: Analyze the file, using a PC analysis tool, and check that SAMPLE DESCRIPTION BOX, TIME TO SAMPLE BOX, SAMPLE SIZE BOX (SAMPLE SIZE 2 BOX), SAMPLE TO CHUNK BOX, CHUNK OFFSET BOX (64BIT CHUNK OFFSET BOX) exist.

Possible cause 3: SAMPLE DESCRIPTION BOX, which signifies that audio streams are contained, did not exist.
How to diagnose: Check the binary data of the file with which this error was generated and confirm that the 20th byte does not indicate "mp4a." (A DRM file may also have this error.)

Possible cause 4: "AudioSpecificConfig" was not described in "SAMPLE DESCRIPTION BOX," which should show that an audio stream is contained.
How to diagnose: Check AudioSpecificConfig, using a PC analysis tool.

Possible cause 5: Data reading failed during file analysis.
How to diagnose: Check the ATA error log on the Debug screen.
* See "How to check the ATA error log," above.

Possible causes for a PRF error
Possible cause 1: Audio streams were not contained in "AAC LC" and "High Efficiency AAC Profile."
How to diagnose: Check the type of audio stream in AudioObjectType of AudioSpecificConfig, using a PC analysis tool.

Possible cause 2: After data reading failed, erroneous AudioObjectType data were obtained.
How to diagnose: Check the ATA error log on the Debug screen.
* See "How to check the ATA error log," above.

Possible causes for an MEM error
Possible cause 1: The shared memory region for the system was fragmented, and the memory region of 4,096 bytes that was necessary for file analysis could not be ensured.
How to diagnose: After setting the unit to Standby mode, turn the unit back on and check if an MEM error is generated. If it is, the system memory may be defective.

6.11 DIAGNOSTIC PROCEDURES WHEN CONNECTING THE LAN

[Purpose]
Diagnose based on Ethernet connection information.
[How to Enter]
Press [ESC], [DISP], [+10], [+10], then [7], in that order.

[1] Specifications of the Ether Debug Screen

```
①  (Ether) Init:OK Link:UP

   [Recorder]
②  MAC:00-E0-36-9A-8A-0C DHCP:ON DNS:ON PRX:IP
③  IP:192.168.1.50       SM:255.255.255.0
④  DG:192.168.1.1
⑤  DP:192.168.1.1        DS:0.0.0.0
⑥  PR:121.10.119.10      PT:80
⑦  SPEED:100BASE-TX full
```

In bold print: Fixed indications
In regular print: Variable indications

No.	Name	Descriptions	Remarks
①	Init	Whether initialization of LAN9211 (Ethernet Controller) has been completed successfully (OK) or not (NG)	In a case of NG, communication between the LAN9211 and EMMA2RFEx may have failed.
	Link	Whether the unit is connected to equipment that can communicate through Ethernet and has established links (UP) or not (DOWN)	
②	MAC	MAC address that is set for the unit	
	DHCP	Setting for automatic acquisition of an IP address	
	DNS	Setting for automatic acquisition of a DNS server	
	PRX	Proxy setting	With the Proxy setting ON, when the server assignment method is server name or IP address, NAME or IP is indicated, respectively.
③	IP	IP address that is set for the unit	
	SM	Subnet mask that is set for the unit	
④	DG	Default gateway that is set for the unit	
⑤	DP	DNS server primary address	
	DS	DNS server secondary address	
⑥	PR	With the Proxy setting ON, the server name or IP address is displayed.	With the Proxy setting OFF, - - - is displayed.
	PT	With the Proxy setting ON, the port number is displayed.	With the Proxy setting OFF, - - - is displayed.
⑦	SPEED	Display the communication speed and Duplex mode.	

[2] Simple diagnostic procedures

Sympton: Neither CDDBonline search nor ConnectPC (Ethernet) function.

No.	Screen Position	Check Items and Unit Status	Possible Cause
1	Ether ①	Init indication: OK: Initialization of the Ethernet-associated LSI (IC301) has been successfully completed. NG: Poor communication between the Ethernet-associated LSI (IC301) and HOST microcomputer (IC1001). Initialization of the Ethernet-associated LSI (IC301) has failed.	With NG: Failure in IC301 (the Ethernet Controller). Failure in communication between IC301 and IC1001, defective solder, or failure in power supply.
2	Ether ①	Link indication: UP: The unit is connected to equipment that can communicate through Ethernet and has established links. DOWN: The links are not established.	With DOWN: Defective LAN terminal, poor connection of the ETAB board, defective LAN cable, the router's power is OFF, or the connected equipment cannot communicate through Ethernet.
3	Ether ②	IP indication: Is the IP address set within the ranges shown below? CLASS A: 10.0.0.1 to 10.255.255.254 CLASS B: 172.16.0.1 to 172.31.255.254 CLASS C: 192.168.0.1 to 192.168.255.254	With an IP address that is out of the range described on the left: If automatic acquisition of an IP address is set to ON, check the setting of the router.

7. DISASSEMBLY

Note 1: Do NOT look directly into the pickup lens. The laser beam may cause eye injury.
Note 2: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

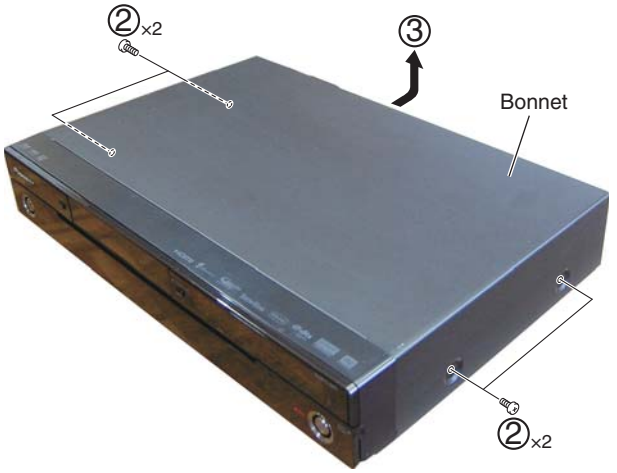
Diagnosis

1 Bonnet

① Remove the five screws.

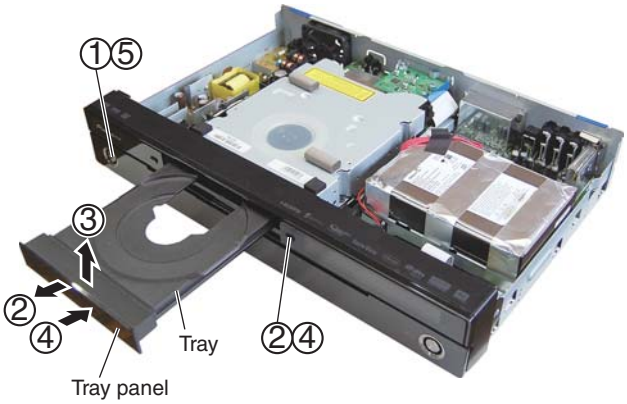
● **Rear view**

② Remove the four screws.
③ Remove the bonnet.



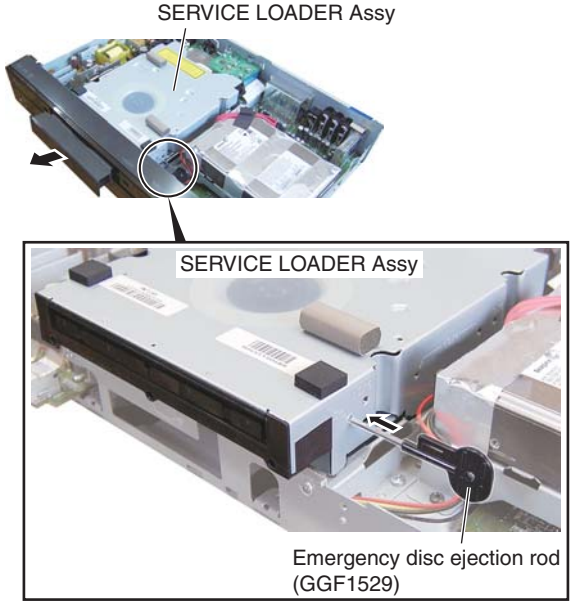
2 Tray Panel

① Press the ⏻ STANDBY/ON button to turn on the power.
② Press the ⏏ OPEN/CLOSE button to open the tray.
③ Remove the tray panel.
④ Press the ⏏ OPEN/CLOSE button to close the tray.
⑤ Press the ⏻ STANDBY/ON button to turn off the power.



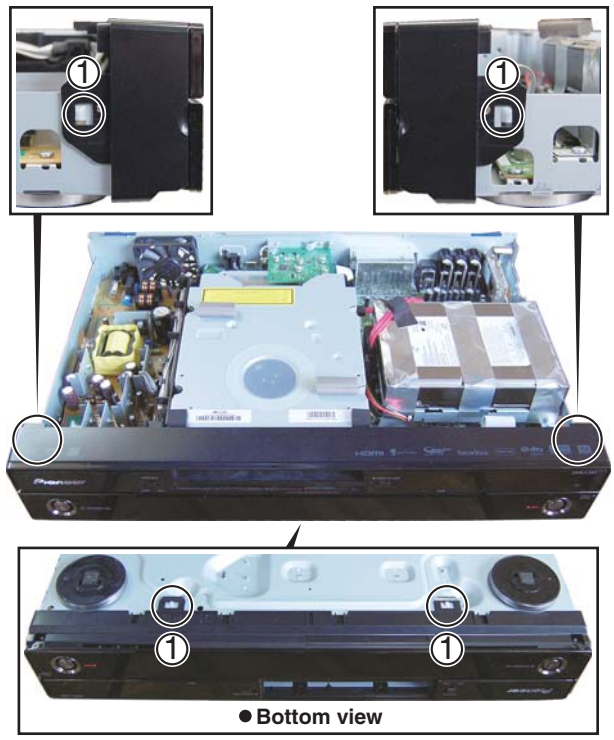
● How to open the tray when the power cannot be turned on

When the tray cannot be opened because the power cannot be turned on, it can be opened using the emergency disc ejection rod (GGF1529). (A long, thin rod about 1 mm in diameter can be used in place of the rod.)



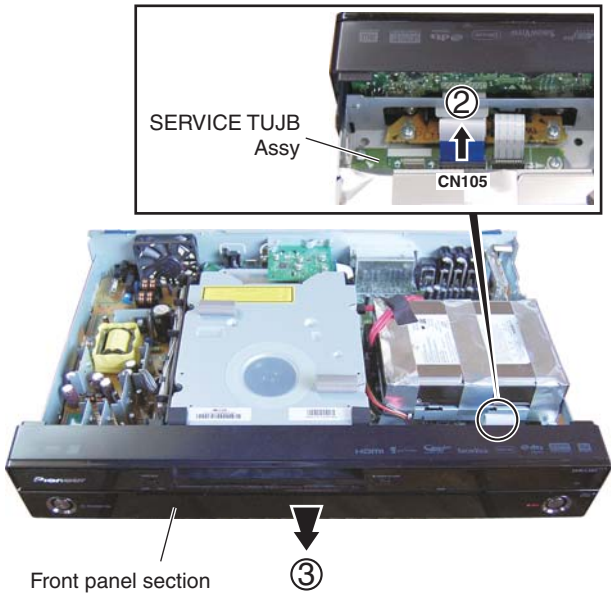
3 Front Panel Section

① Unhook the four hooks.



② Disconnect the one flexible cable.

③ Remove the front panel section.

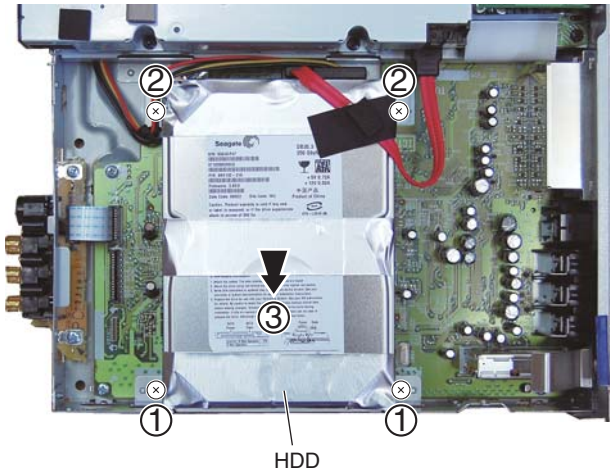


4 HDD

① Remove the two screws.

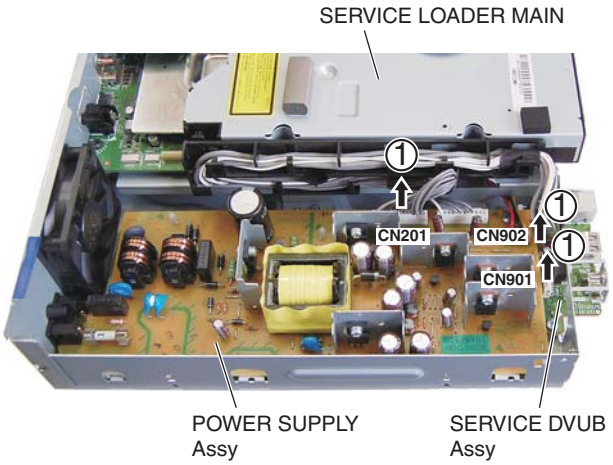
② Remove the two screws.

③ Remove the HDD with the HDD stay.



5 SERVICE LOADER MAIN

① Disconnect the three connectors.



DVR-660H-K Only

② Remove the two screws.

③ Remove the ETAB Assy while disconnecting the B to B connector.

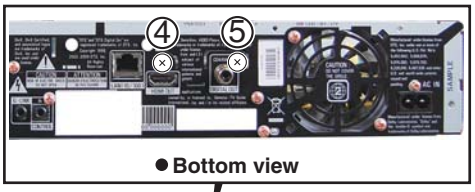
④ Remove the one screw.

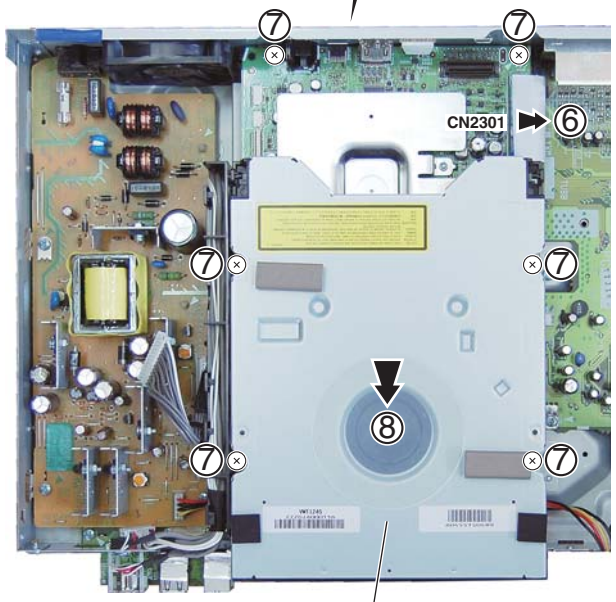
⑤ Remove the one screw.

⑥ Disconnect the one flexible cable.

⑦ Remove the six screws.

⑧ Remove the SERVICE LOADER MAIN.

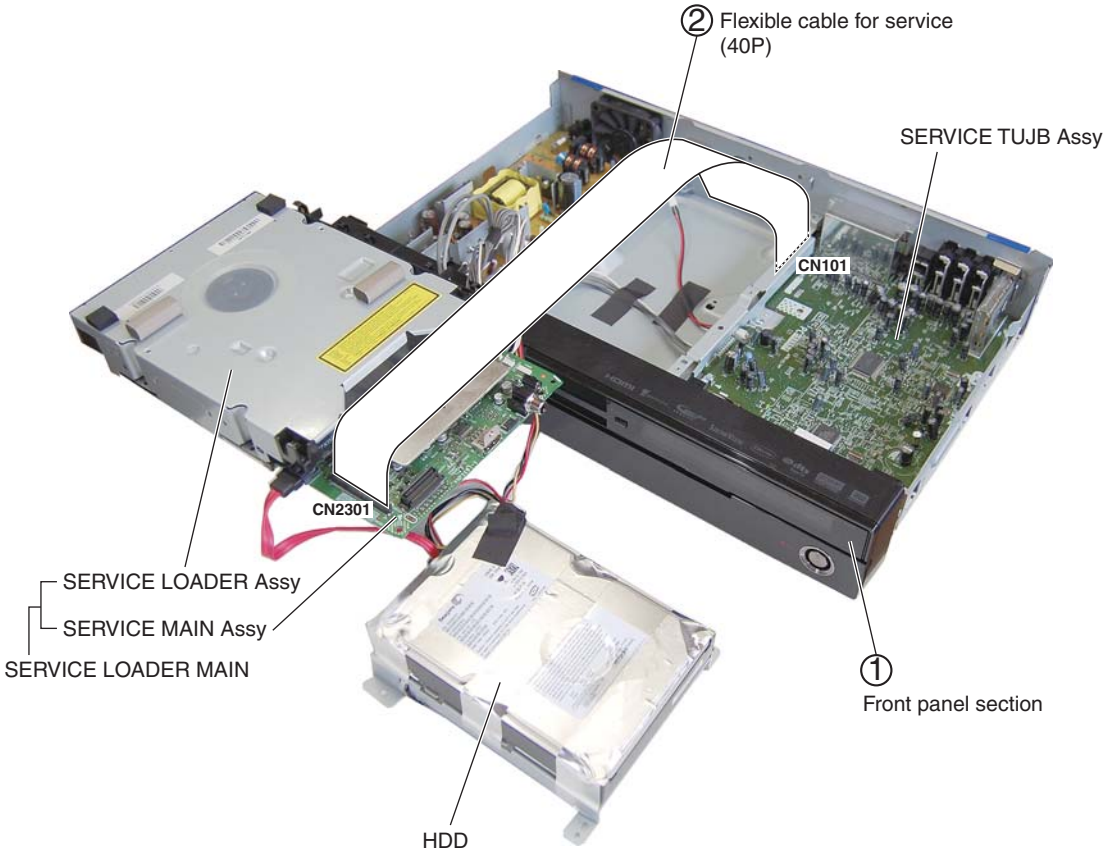




6 Diagnosis

① Reassembling the front panel section.
② Connect the flexible cable for service.
③ Arrange the unit as shown in the photo below.

Diagnosis

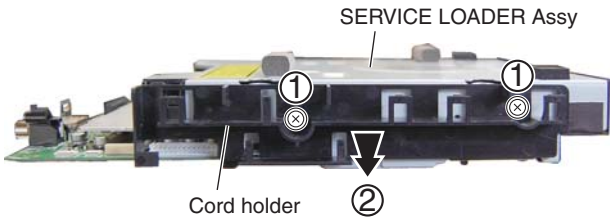


Access to the SERVICE MAIN Assy, Cleaning the Pickup Lens

● Cord Holder

① Remove the two screws.

② Remove the cord holder.

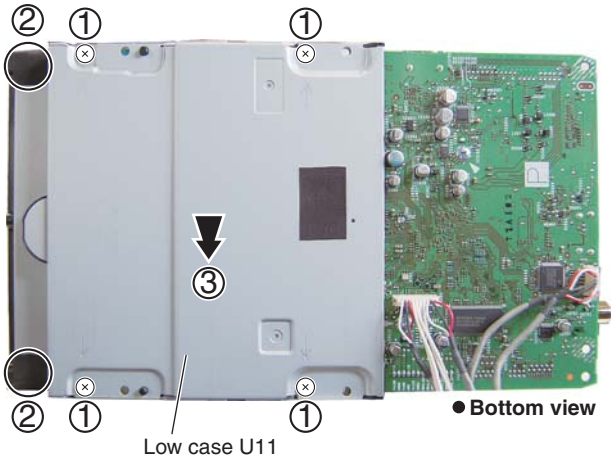


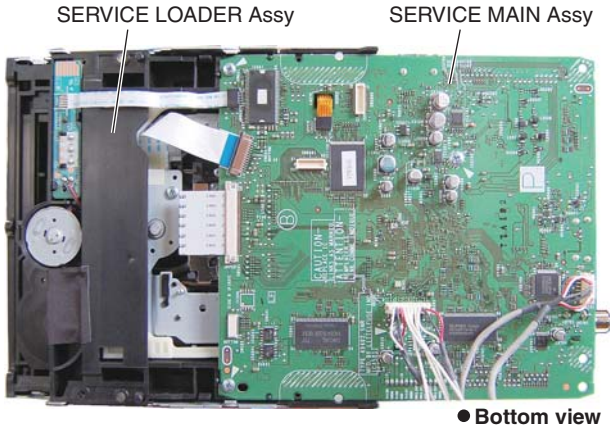
● Low Case U11, Upper Case

① Remove the four screws.

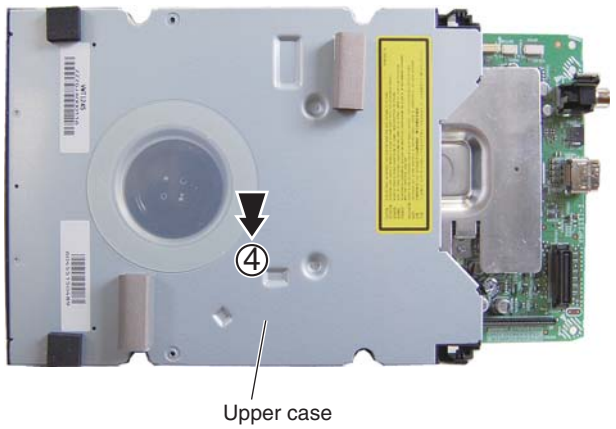
② Remove the two tapes.

③ Remove the low case U11.



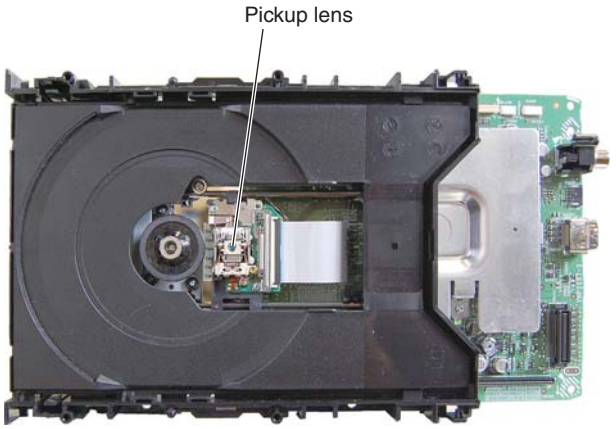


④ Remove the Upper case.



Before shipment, be sure to clean the pickup lens, using the following cleaning materials:

Cleaning liquid : GEM1004
Cleaning paper : GED-008



8. EACH SETTING AND ADJUSTMENT

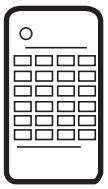
8.1 MODEL SETTING

[Purposes]

When the MAIN Assy and/or TUJB Assy that are(is) commonly used with another model are(is) replaced, they(it) must recognize the model of this unit.

Items to be set: The model number, destination, and region No. must be set.

[Tool to be used]



Remote control unit for servicing
(GGF1381)

[Notes]

- Once the setting has been made, it can never be changed. Be sure to make the setting correctly.
- As this setting resets the Assy(s) in question to the factory-preset status, it is recommended that you obtain the customer's consent beforehand.

[Procedures]

1. After the unit is turned on, the model name for the original equipment manufacturer is displayed on the TV monitor screen. Input "9696" on the remote control unit for service to change it to the model name for Pioneer.

```
[Recorder's Mode] Setting]
Input the number using the remote for Service

> ——

Input No.  No. Mode]          Input No.  No. Mode]
[ 0116 :  1  MRX-1725/EC1 ] [ 0318 :  7  MRX-1750/EC2 ]
[ 0216 :  2  MRX-1735/EC1 ] [ 0418 :  8  MRX-1795/EC2 ]
[ 0316 :  3  MRX-1755/EC1 ] [ 0220 :  9  MRX-1730/CEK ]
[ 0416 :  4  MRX-1799/EC1 ] [ 0222 : 10  MRX-1730/RU3 ]
[ 0118 :  5  MRX-1720/EC2 ] [ 0322 : 11  MRX-1750/RU3 ]
[ 0218 :  6  MRX-1730/EC2 ] [ 0422 : 12  MRX-1795/RU3 ]
```

2. The following screen is displayed on TV monitor. Press four digits properly by using the remote control unit for service,
according to the screen information.

```
[Recorder's Mode] Setting]
Input the number using the remote for Service

> ——

Input No.   Mode]
[     :           ]
[     :           ]
[     :           ]
[     :             ]
[     :             ]
```

3. Disconnect then reconnect the AC power cord of the unit. Be careful not to impart vibration to the unit immediately after the AC power cord is disconnected.

4. Reset the recorder to all its factory settings.
(Make sure that the recorder is on. Press and hold ■ (STOP) key and press ⏻ (STANDBY/ON) key on the front panel.)
The recorder turns off with all settings reset.

```
DVR-660H/KC              VERSION : 0.14
   SYSCON  : RELEASE_179
             Rev.1.7379
TUNERCON   : 2.22                    OK
    DRIVE  : DVD-RW  DVR-U13         OK
             1.10                    OK
PIC SERIAL : 007710217604
  HDD INT  : ----
  HDD USE  : ----
 GNDB B    : NOBKUP     GNDB U : NOBKUP
 DEVICE    : E2R-FEx1.1 FLASH  : 128M
 REGION    : 1            C : 0000000153
                       HDCP : 0000000153
```

5. Press [ESC] then [DISP] keys by using the remote control unit for servicing, and then confirm each Model Name.

6. End

8.2 LD POWER ADJUSTMENT

[Purposes]

If a combination of a main board and PU is changed, the LD power adjustment and adjustment for disc judgment needs to be made for a new combination of the main board and PU since the adjusted LD-power value becomes inappropriate for the new combination and stable playback and recording to disc becomes impossible.

[Tools to be used]

GGF1381 : Service Remote Control Unit
GGV1054 : CD-ROM (CDT-313)
GGV1036 : DVD-ROM DL (DVDT-002)
GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)
GGV1282 : Blank DVD-RW (JVC VD-W120XH5)
GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)

[Notes] Never turn the power off while any of the following operations is in progress:
- While laser diode (LD) power adjustment is being performed normally by the unit
- While adjustment for disc judgment is being performed

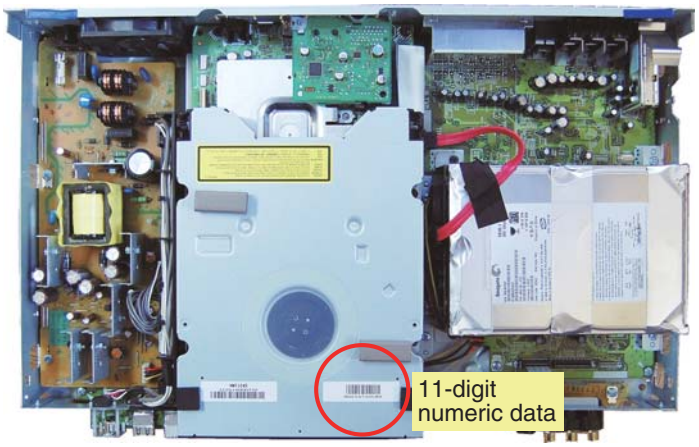
[Explanation on each adjustment mode]

- Drive Adjustment Mode

  This mode is used to select each mode for LD power adjustment.
  In this mode, you can confirm an 11-digit number provided for the LD power adjustment.
  The 11-digit number is stored in FLASH (IC1102) of the main board.

- PU Data Setting Mode

  This mode is used to enter an 11-digit number provided for the LD power adjustment.
  If you have changed a combination of the main board and PU, enter an 11-digit number marked on the case of a loader which is provided in pairs with PU.
  The LD power adjustment is made by using this 11-digit number.



- Power Adjustment Mode

  This mode is used to execute the LD power adjustment and to check the progress of the adjustment.
  In case an error occurs during the adjustment, you can also check the error details in this mode.

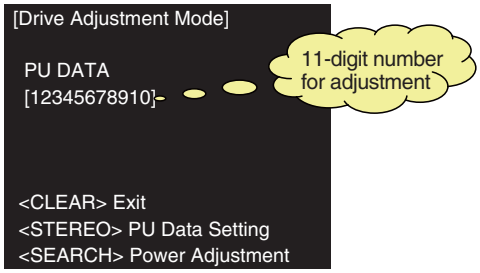
[How to enter Drive Adjustment Mode]

To enter the Drive Adjustment Mode, press [ESC]+[CX]+[1]+[0] on the remote control unit for service.

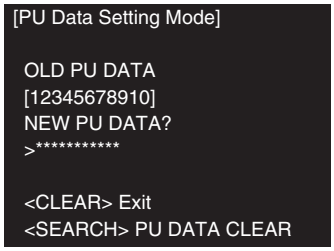
Though the LD power adjustment can be executed irrespective of the product functions, do not operate the product during the LD power adjustment to prevent misadjustment.

[Operation procedure]

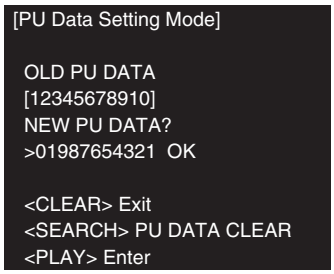
1. When you enter the Drive Adjustment Mode, the following screen is displayed. On this screen, you can check 11-digit numeric data stored in FLASH of MAIN Assy, and can also switch over between each mode.



2. To enter the PU Data Setting Mode, press [STEREO] on the remote control unit for service.
   Entering the PU Data Setting Mode displays the following screen.

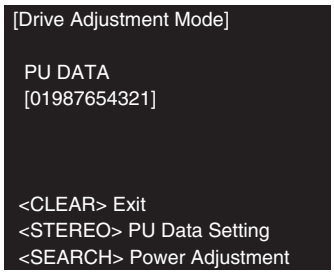


3. By pressing [0] to [9] keys on the remote control unit for service, enter an 11-digit number marked on the case of a loader provided in pairs with PU.
   Entering the 11-digit number displays the following screen.



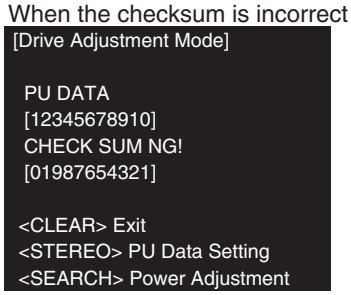
4. To enter the 11-digit number, press [PLAY] on the remote control unit for service.
   The 11-digit number contains 2-digit checksum data to prevent input errors.
   The screens displayed for the correct/incorrect check sum are as follows.

When the checksum is correct



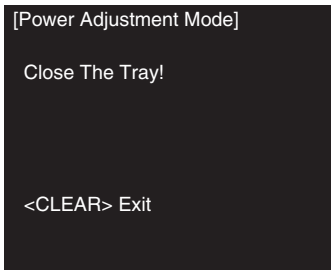
When the checksum is correct
Enter the Power Adjustment Mode and execute the LD power adjustment, as described in 5.

When the checksum is incorrect



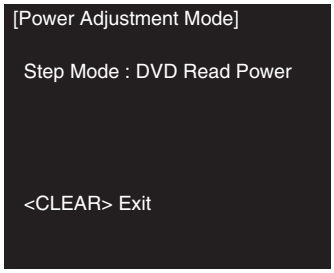
When the checksum is incorrect
The input data may be incorrect.
Return to 2 and enter the PU Data Setting Mode to re-enter the 11-digit number.

5. When the checksum is correct, enter the Power Adjustment Mode and execute the LD power adjustment.
   To enter the Power Adjustment Mode, press [SEARCH] on the remote control unit for service.
   Entering the Power Adjustment Mode displays the following screen and opens the tray automatically.



When the tray does not open
- Check if flexible cables and wire rods are connected properly.
- Errors in the loader, main board, or power source board are suspected.

6. Close the tray manually to execute the LD power adjustment mode.
   You can check the progress of adjustment in the following screen.

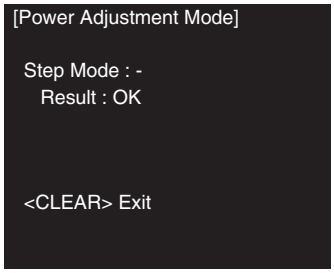


Explanation on Step Mode (time needed)
- DVD Read Power (approx. 10 sec.)
  Adjustment of DVD playback power
- RAM Read Power (approx. 20 sec.)
  Adjustment of RAM playback power
- DVD Write Power (approx. 40 sec.)
  Adjustment of DVD recording power
- CD Read Power (approx. 10 sec.)
  Adjustment of CD playback power
- DVD Disc Judgment (approx. 30 sec.)
  Adjustment for DVD disc judgment
- CD Disc Judgment (approx. 30 sec.)
  Adjustment for CD disc judgment

7. When DVD Disc Judgment is displayed in the Step Mode, the tray opens automatically.
   Place DVDT-002 in the tray. The tray closes after 15 seconds from the time it opened.
   If the adjustment for DVD disc judgment is completed successfully, CD Disc Judgment is displayed in the Step Mode.

If the adjustment for DVD disc judgment is not completed successfully
- A disc other than DVDT-002 may have been placed.
  Place DVDT-002 in the tray.

8. When CD Disc judgment is displayed in the Step Mode, the tray opens automatically.
   Place CDT-313 in the tray. The tray closes after 15 seconds from the time it opened.
   If the adjustment for CD disc judgment is completed successfully, the following screen is displayed.
   Since the judgment is completed successfully, press [CLEAR] on the remote control unit for service and exit from the adjustment mode.

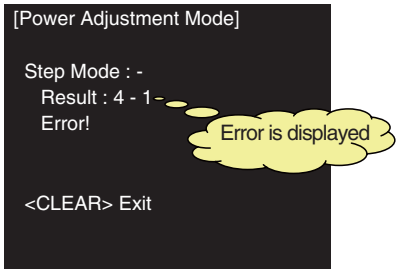


If the adjustment for CD disc judgment is not completed successfully
- A disc other than CDT-313 may have been placed.
  Place CDT-313 in the tray.

9. Turn off the power.

[Error information]

In case of errors in the Power Adjustment Mode, the following screen is displayed.



About error indication

[Left number]

The left number indicates the Step Mode in which the error has occurred.

2: Adjustment of DVD playback power
3: Adjustment of RAM playback power
4: Adjustment of DVD recording power
5: Adjustment of CD playback power
6: Adjustment for DVD disc judgment
7: Adjustment for CD disc judgment

[Right number]

The right number indicates the error information.

1 or 2: Error in the adjustment process
(Details of error)
- The PU flexible cables may not have been connected.
- TM or main board error is suspected.

3: Forced termination
This number is displayed when you pressed [CLEAR] on the remote control unit for service and executed forced termination.

[Contents to check]

1. Record the data to a designated disc (DVD-R / DVD-RW / DVD-RAM) in real time.
2. Measure an error rate at a place where recording is executed.
   Measurement method: Refer to the simplified error rate measurement method in the Service Mode.
3. Check that the error rate is 3.3e-3 or below.

If the error rate is out of specification

- Check if there is any defect or fingerprint on the disc. If you find any problem with the disc, change the disc and try the check again.
- The power adjustment may have been unsuccessful. Try the power adjustment again.

If the above two do not solve the problem, a defect with MAIN Assy or PU is suspected.

8.3 CPRM ID NUMBER AND DATA SETTING

[Purposes]

For the DVD recorder,it is necessary with the recoding/playback of DVD-RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, cannot work with residual quantity 0:00 or operations in the future may not be guaranteed with RW disc. You will find the ID number to be set on the ID label on the rear panel.

The Input is Necessary When:

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY or the HDD is exchanged.

[Tools to be used]

Remote control unit supplied with the unit

Remote control unit for servicing (GGF1381)

DVD Recorder Data Disc (Type 2)

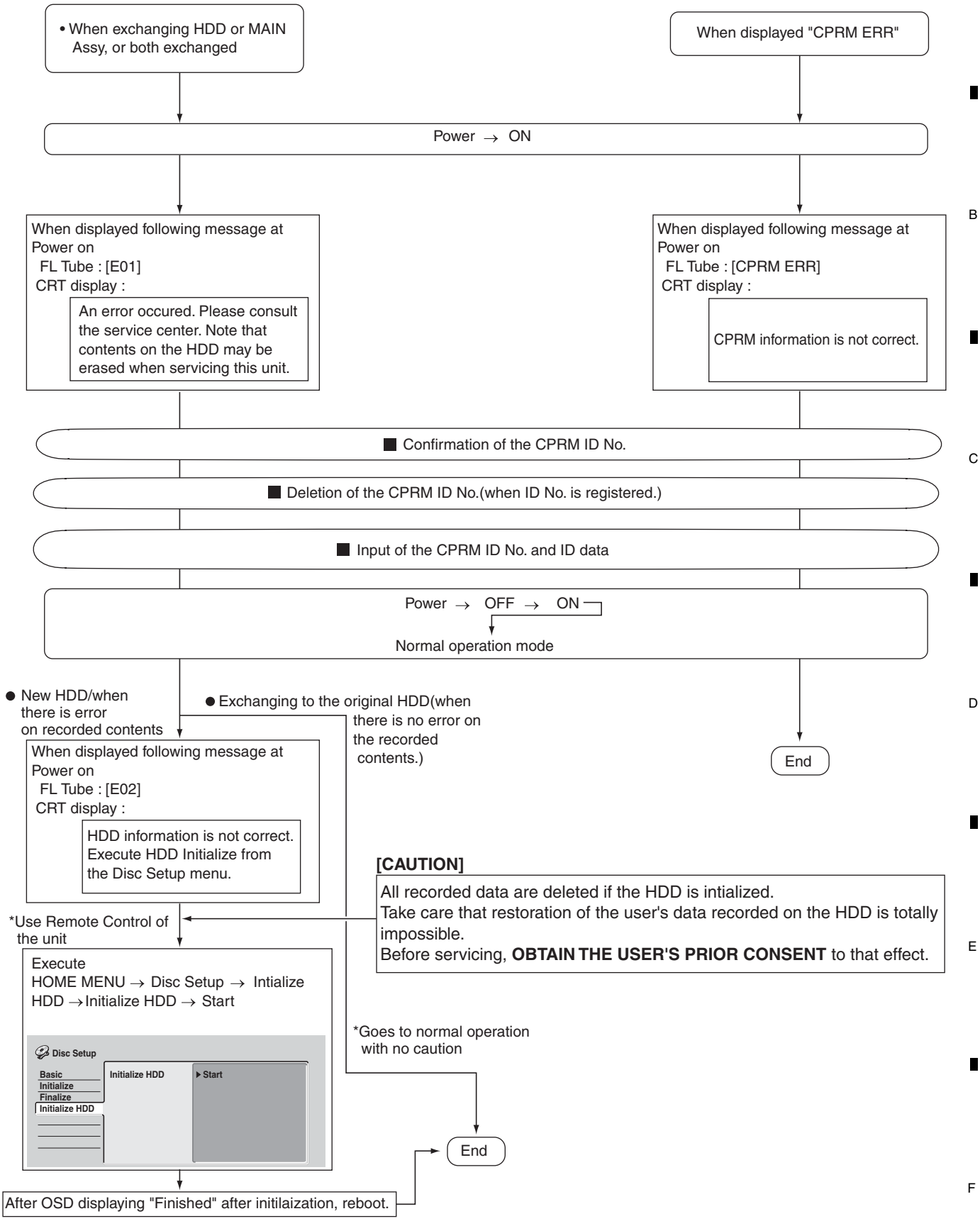
Be sure to use the latest disc (Type 2). In Apr. 2008, the latest disc is GGV1321.

[Notes]

Important: If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

- Input the ID number while the unit is in Stop mode.
- After the data are read from the data disc (Type 2), the disc will automatically be unloaded.

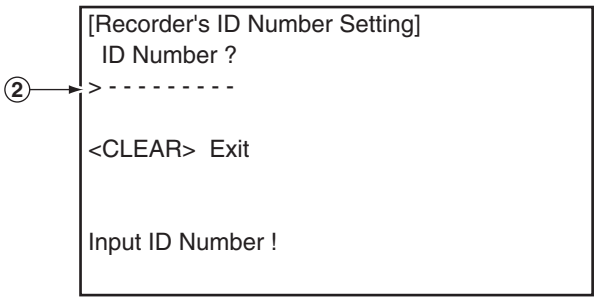
[1] Input Flow of the ID No. and ID Data When Exchanging HDD or MAIN Assy


• When exchanging HDD or MAIN Assy, or both exchanged
When displayed "CPRM ERR"
Power → ON
When displayed following message at Power on
FL Tube : [E01]
CRT display :
An error occured. Please consult the service center. Note that contents on the HDD may be erased when servicing this unit.
When displayed following message at Power on
FL Tube : [CPRM ERR]
CRT display :
CPRM information is not correct.
■ Confirmation of the CPRM ID No.
■ Deletion of the CPRM ID No.(when ID No. is registered.)
■ Input of the CPRM ID No. and ID data
Power → OFF → ON
Normal operation mode
● New HDD/when there is error on recorded contents
● Exchanging to the original HDD(when there is no error on the recorded contents.)
End
When displayed following message at Power on
FL Tube : [E02]
CRT display :
HDD information is not correct. Execute HDD Initialize from the Disc Setup menu.
[CAUTION]
All recorded data are deleted if the HDD is intialized.
Take care that restoration of the user's data recorded on the HDD is totally impossible.
Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
*Use Remote Control of the unit
Execute
HOME MENU → Disc Setup → Intialize HDD → Initialize HDD → Start
Disc Setup
Basic
Initialize
Finalize
Initialize HDD
Initialize HDD
Start
*Goes to normal operation with no caution
End
After OSD displaying "Finished" after initilaization, reboot.

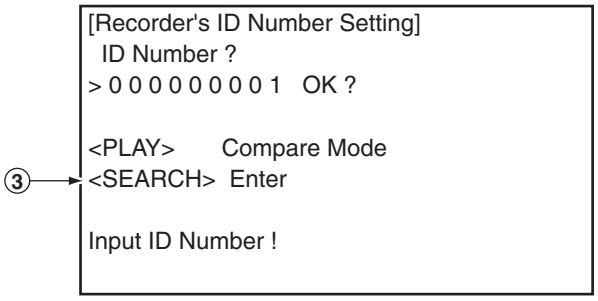
[2] How to Input the ID Number and ID Data

① To enter the input mode, press ESC + STEREO keys sequentially in a status with no ID number set, such as after FLASH-ROM downloading.

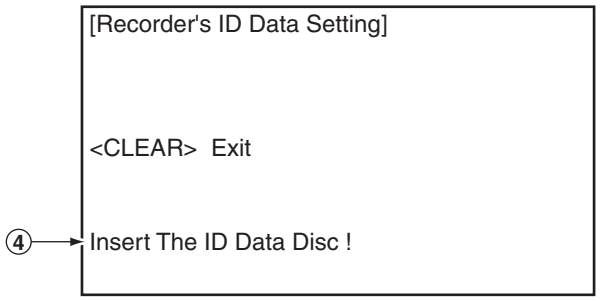
② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)



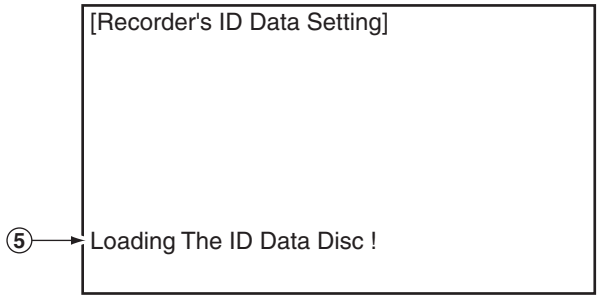
③ After inputting the number, press SEARCH keys to register the ID number.



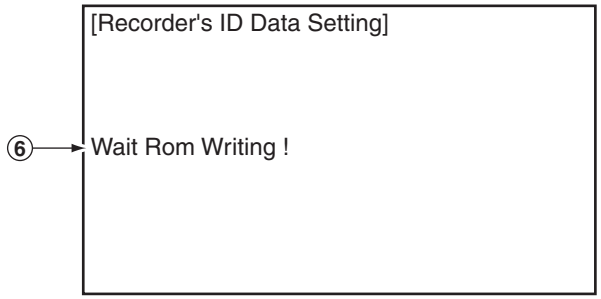
④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/⏏" on the player.



⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")

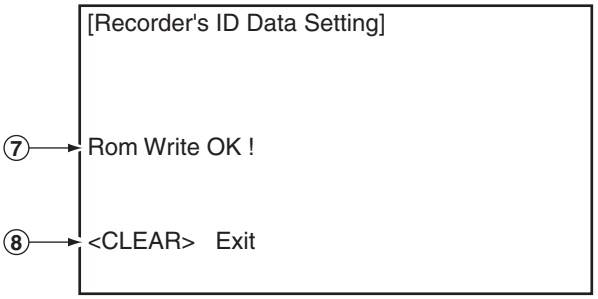


⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")



⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID OK.")

⑧ After confirming this message, press CLEAR key to exit the input mode.

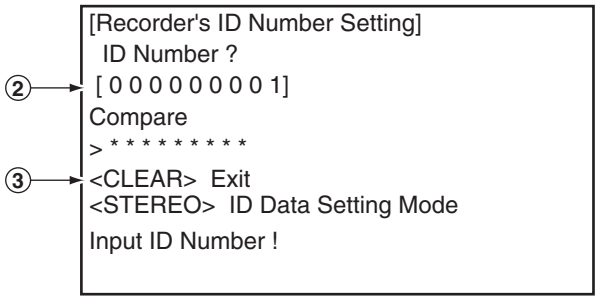


[How to Confirm the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.

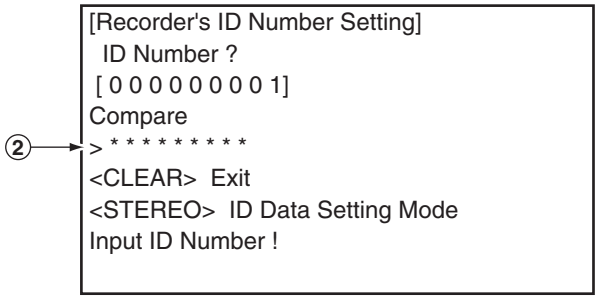
③ To exit this mode, press CLEAR key.



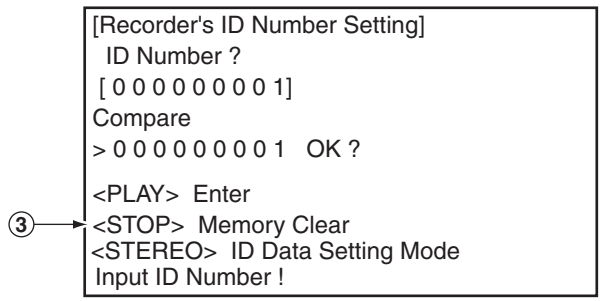
[How to Clear the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② Input the same number as the ID number you have set.



③ After inputting the number, press STOP key.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step ②.
(STOP key is not accepted until 9 digits are entered.)



8.4 FIRMWARE UPDATE METHOD

[Purposes]

1. When the main board is replaced, the firmware versions for the system control computer, drive, and the TUFL microcomputer do not match, and operations of the unit may be destabilized.
   To match the versions for the above three, firmware downloading is necessary in the following cases:
   ① After the model setting
   ② When NG is displayed on the first screen (version information, etc.) of Service mode
   ③ After changing MAIN Assy or TUJB Assy

2. Rewriting the firmware to the latest version may ameliorate the symptoms claimed by the customer.

There are the following two methods for update: disc update and serial update

[1] Disc Update

[Tools to be used]

Remote control unit
for servicing
(GGF1381)

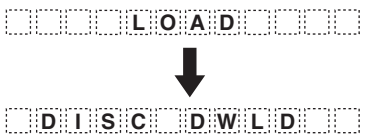
Firmware Update Disc
(Refer to Page 90.)

[Notes]

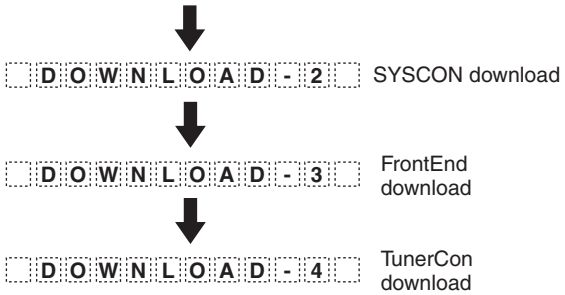
Be sure NOT to turn off the unit during update.
If the unit is turned off during update, the SYSCON, TUNERCON, DRIVE programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again.

[Procedure] ① Open a disc tray by pressing the "OPEN/CLOSE" button.
② Put the update disc on the tray. Press a " OPEN/CLOSE " button while pressing a "Record Stop" button on the frontpanel.
* The disc tray closes automatically and the disc is loaded.
* The disc tray opens automatically after loading.

FL display



③ Take out the Download Disc.



* After update is completed, the power turns off, and a disc tray closes automatically.
* It takes for about 7-8 minutes until update is completed.

④ The power turns on and press a " ESC " button, then press " DISP " button on the remote control unit for servicing.
⑤ Confirm a firmware release version.
⑥ Press " ESC " button on the remote control unit for servicing in order to exit the test mode.

[Tips]

(1) If the power is not correctly turned on or when the power is shut off during update, proceed as follows before performing update again:

- In a case where update was incorrectly terminated while "DOWNLOAD-2" was displayed on the FL display:
  The SYSCON program will not function correctly.
  If the program cannot be update from the disc or through serial communication, replace the MAIN Assy.
- In a case where update was incorrectly terminated while "DOWNLOAD-3" was displayed on the FL display:
  The DRIVE program will not function correctly.
  If the program cannot be update from the disc, replace the MAIN Assy.
- In a case where update was incorrectly terminated while "DOWNLOAD-4" was displayed on the FL display
  The program for the tuner microcomputer will not function correctly.
  If the program cannot be update from the disc, replace the TUNERCON microcomputer (IC101 : TUJB Assy).

[2] Serial Update

[Purposes]

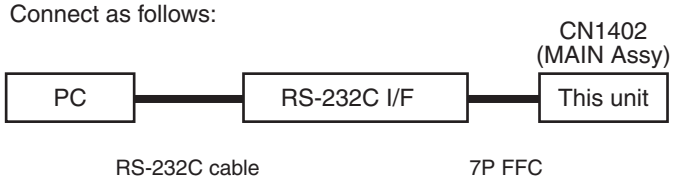
1. This method is used when disc update fails.

[Tools to be used]

* PC with serial port
* RS-232C straight cable
* RS-232C I/F jig (GGF1348)
* 7P FFC (VDA1681)
* Update program (UFU.exe)
* Firmware

[Connection]

Connect as follows:



[Procedures]

①Connect the 232C I/F jigs above way.

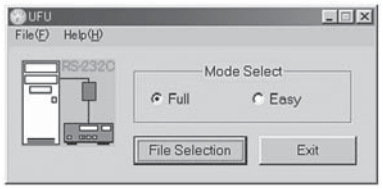
②Turn on the PC and start the " UFU.exe ".

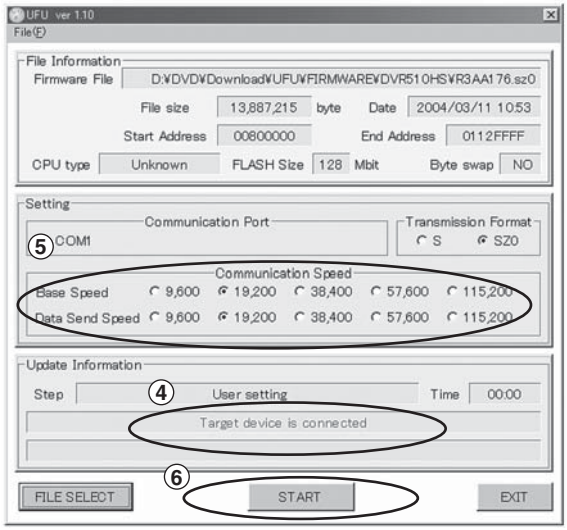
③Select the Firmware file. ("sz0" file)

④Turn the DVD recorder on and start the update program.
" Target Device is connected " is appeared on the screen.

⑤Select the Communication Speed (Baud Rate)
a) Base Speed 115,200
b) Data Send Speed 115,200

⑥START
- Even if you click "START" button, sometimes "Communication Error" may come out one to twice, and update may fail.
  In this case, please click "START" again.
- Other factors can be considerd if update fails 3 times or more.
- And it takes about 40 minutes for updating the firmware.





■ HOW TO PRODUCE A DISC FOR UPDATING

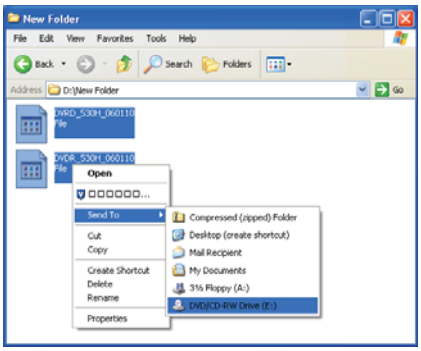
Items necessary for producing a disc (CD-R or CD-RW) for updating

- CD-R/RW drive
- CD-R/RW writing software
- Blank CD-R or CD-RW disc
- Supported OS: Windows 98/98SE/ME/2000/XP *

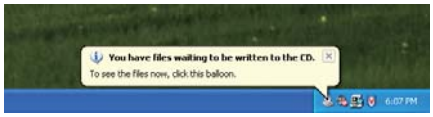
* Other OS's, such as Linux and MacOS, cannot be used.

How to produce a disc for updating

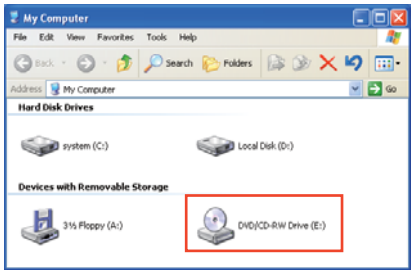
1. Right-click on the icon of the file for updating that you downloaded to any folder and select "Send To" in order to send the file to the drive to be used for writing to the disc.
   * Do NOT change the filename.



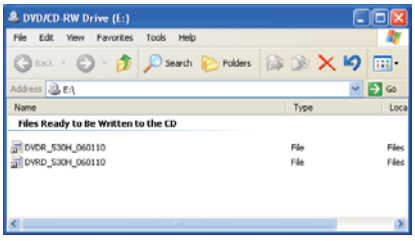
2. An icon appears at the right of the taskbar on the bottom of the screen. Click on it.



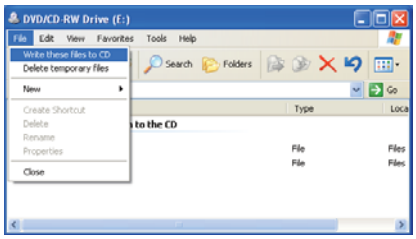
* If the icon does not appear, select the drive to be used for writing to the disc from My Computer.



When the PC is ready for writing, the window shown will be displayed.



3. Load a CD-R/RW disc in the drive. Select File then "Write these files to CD" * Be sure to use a blank disc.
   * Scratches or dirt on the disc may result in a failure in writing.



4. The Writing to CD Wizard will be displayed. Click on Next to start writing.

CD Writing Wizard
Welcome to the CD Writing Wizard
This wizard helps you write, or record, your files to a CD recording drive.
Type the name you want to give to this CD, or just click Next to use the name below.
CD name:
01 10 2006
New files being written to the CD will replace any files already on the CD if they have the same name.
Close the wizard after the files have been written
< Back
Next >
Cancel

5. When writing is finished, the disc will be ejected. Production of the disc for updating is completed.

8.5 GRACENOTE DATABASE UPDATE METHOD (DVR-660H-K, 560-K ONLY)

[Purposes]

1. Gracenote DB should be stored in build-in HDD to search for audio CD titles.
   After replacing the HDD, it is necessary to download the Gracenote DB.

2. While the GUI screen is not displayed, press the ESC then DISP keys.
   When “NOBKUP” was displayed on the first screen (version information, etc.), update the latest Gracenote Database (GNDB) information.

3. Rewriting the database to the latest version may ameliorate the symptoms claimed by the customer.
   (Confirm that the GNDB B and GNDB U are latest version.)

[1] Disc Update

[Tools to be used]

Remote control unit
for servicing
(GGF1381)

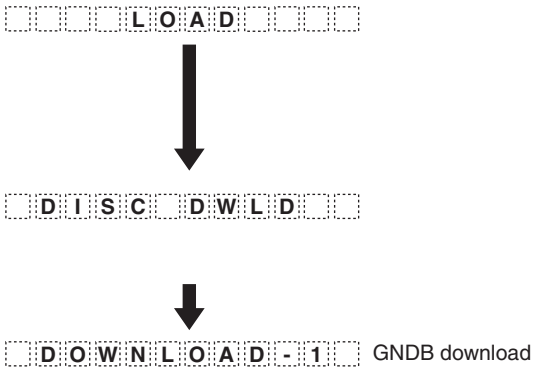
Gracenote DB
Update Disc
(Refer to Page 90.)

[Notes]

Be sure NOT to turn off the unit during update.
If the unit is turned off during update, the GNDB programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again.

[Procedure] ① Open a disc tray by pressing the "OPEN/CLOSE" button.
② Put the update disc on the tray. Press a " OPEN/CLOSE " button while pressing a "Record Stop" button on the frontpanel.
* The disc tray closes automatically and the disc is loaded.

FL display



GNDB download

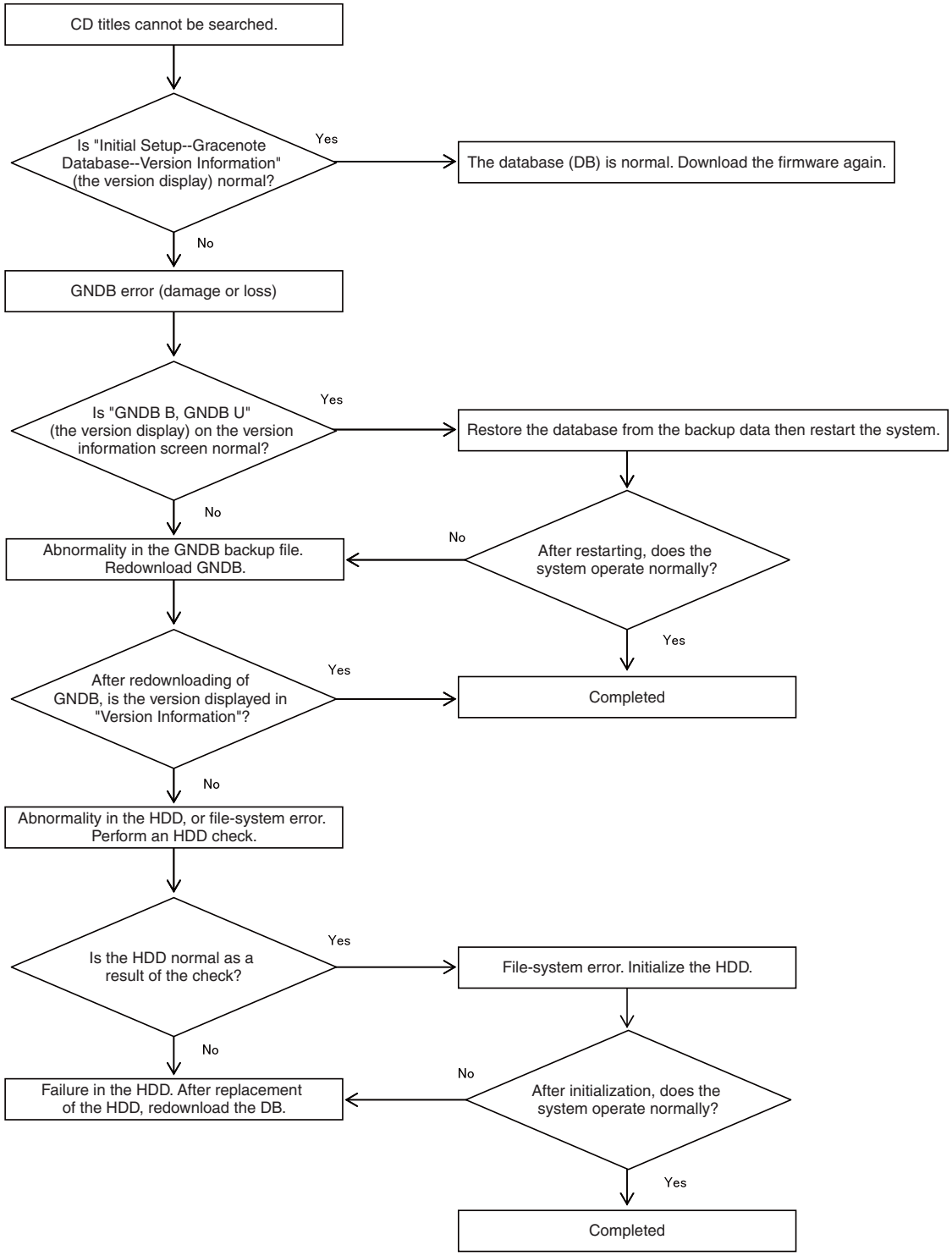
*After update is completed, the disc tray opens automatically.
At this time, "DOWNLOAD-1" or "CLOCK" is displayed on the FL display.
*It takes for about 15 minutes until update is completed.

③Take out the Update Disc.
④The power turns off. (An effective key is "STANDBY/ON" key.)
⑤The power turns on and press a " ESC " button, then press " DISP " button on the remote control unit for servicing.
⑥Confirm a GNDB B and GNDB U version.
⑦Press " ESC " button on the remote control unit for servicing in order to exit the test mode.

[Tips]

Note: If the AC power fails during updating, the HDD may be damaged.

[Diagnosis Flowchart]


CD titles cannot be searched.
Is "Initial Setup--Gracenote Database--Version Information" (the version display) normal?
Yes
The database (DB) is normal. Download the firmware again.
No
GNDB error (damage or loss)
Is "GNDB B, GNDB U" (the version display) on the version information screen normal?
Yes
Restore the database from the backup data then restart the system.
No
After restarting, does the system operate normally?
No
Abnormality in the GNDB backup file. Redownload GNDB.
Yes
Completed
After redownloading of GNDB, is the version displayed in "Version Information"?
Yes
No
Abnormality in the HDD, or file-system error. Perform an HDD check.
Is the HDD normal as a result of the check?
Yes
File-system error. Initialize the HDD.
No
After initialization, does the system operate normally?
No
Failure in the HDD. After replacement of the HDD, redownload the DB.
Yes
Completed

8.6 VIDEO ADJUSTMENT FOR SPECIFIC AREA

[Purposes]

Depending on the area, if a flicker may appear in a picture received by the tuner, it can be corrected or reduced with this setting.

[Tools to be used]

Remote control unit supplied with the unit

Remote control unit for servicing (GGF1381)

[1] Specific-Channel Setting Mode

In this mode, specific settings can be made for up to 12 channels.
For channels that do not have specific settings, the settings of General Setting mode are applied.

[How to enter this mode]

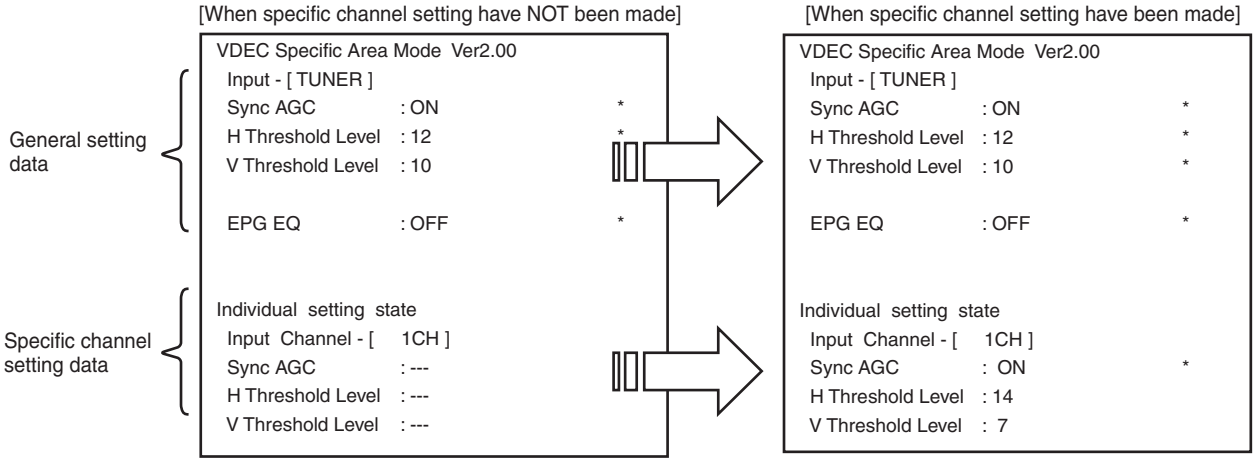
① Select a channel or line input (L1-L3) on which a specific setting is to be made.
② Press the ESC then CHP/TIM keys on the remote control unit for servicing. "General Setting mode" is displayed.
③ Press the DIG/ANA key in General Setting mode. Specific-Channel Setting mode is entered.

[How to exit] Press the ESC key on the remote control unit for servicing to return the Normal mode.

[Note] Setting is in effect only during recording/playback stop.

[Setting examples]

The setting examples in Specific-Channel Setting mode are shown below.
For details on each setting item, see "Table 1: Key operations in Specific-Area Setting mode."


[When specific channel setting have NOT been made]
[When specific channel setting have been made]
General setting data
Specific channel setting data
VDEC Specific Area Mode Ver2.00
Input - [TUNER]
Sync AGC : ON *
H Threshold Level : 12 *
V Threshold Level : 10
EPG EQ : OFF *
Individual setting state
Input Channel - [1CH]
Sync AGC : ---
H Threshold Level : ---
V Threshold Level : ---
VDEC Specific Area Mode Ver2.00
Input - [TUNER]
Sync AGC : ON *
H Threshold Level : 12 *
V Threshold Level : 10 *
EPG EQ : OFF *
Individual setting state
Input Channel - [1CH]
Sync AGC : ON *
H Threshold Level : 14
V Threshold Level : 7

[Tips]

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (- -).
- If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.
- The setting indicated with an asterisk (*) is the default.
- The channels to be indicated for "Input Channel" are as shown below:
  Line inputs: L1-L3, DV (DV is not valid for specific-area settings.)
  Tuner channels: Channels received by the tuner (channels to be set in Specific-Channel Setting mode, etc.)

[Tips]

- Indication when the maximum number (12) of channels have individual settings
  If a channel that does not have specific settings is currently selected, the indication will be as shown below, and individual data items cannot be set for that channel. To set individual data items for the currently selected channel, you must clear any specific-channel settings for one or more channels.

```
Specific Area Mode
 Input - [ TUNER ]
 Sync AGC          : ON          *
 H Threshold Level : 12          *
 V Threshold Level : 10          *

 EPG EQ            : OFF         *


Individual  setting  state
 Sorry !
 You can store only 12 channels
 for Specific Area mode.
```

[H Threshold Level]
The slice level setting for the horizontal(H)-sync separation circuit can be changed. By your changing the slice level, horizontal sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[V Threshold Level]
The slice level setting for the vertical(V)-sync separation circuit can be changed. By your changing the slice level, vertical sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[Receiver sensitivity setting for an electronic program guide (EPG)]
The sensitivity when receiving an electronic program guide can be selected. Set the sensitivity to "High" only if reception is unstable.

[2] General Setting Mode

[How to enter this mode]

- To shift from Specific-Channel Setting mode:
  Each time the DIG/ANA key is pressed, Specific-Channel Setting mode and General Setting mode are alternately selected.

- To shift from Normal mode (recording/playback stop):
  Press the ESC then CHP/TIM keys.

[How to exit] Press the ESC key to return the normal mode.

[Setting examples]

Show setting example on the General Setting mode screen to the following.
Regarding setting of actual each item, refer to table 1 (key operations in specific-area setting mode).

[General Setting mode screen]

```
Specific Area Mode
 Input - [ TUNER ]
 Sync AGC          : ON          *
 H ThresholdLevel  : 12          *
 V Threshold Level : 10          *

 EPG EQ            : OFF         *
```

*: Setting is the default.

[Display in General Setting mode when the channel currently displayed has specific settings]

```
Specific Area Mode
 Input - [ TUNER ]
 Sync AGC          : ON          *
 H ThresholdLevel  : 12          *
 V Threshold Level : 10          *

 EPG EQ            : OFF         *

This channel is set up
 individually.
```

[Tips]

- General Setting mode can be entered only during recording/playback stop.
- The currently selected input mode (TUNER or LINE) is displayed for "Input."
- If L1, L2, L3, or DV is selected for input, general settings for the line input can be made (DV is not valid for specific-area settings), and if TUNER is selected, general settings for the tuner input can be made.

Table 1: key operations in specific-Area setting mode (1/2)

Key operations in Specific Area Setting mode of the remote control units are shown in the table below (the keys are of the remote control unit for servicing unless otherwise stated):

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[DIG/ANA]	Switches General setting mode and Specific setting mode.	–	–	○	○
[INPUT SELECT], [CHANNEL +/-] (Remote control unit supplied with this unit)	Switches inputs or channels.	–	–	○	○
[SIDE A] , [SIDE B]	Sets SyncAGC.	ON(*) / OFF	ON : The sync level is set to an appropriate value. OFF : Cancel the Sync AGC.	○	○
[Rev ×3], [×3 Fwd]	Sets H Threshold.	0 – 15 (Default : 12)	[Rev ×3] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [×3 Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○
[Rev CHAPTER SKIP] [CHAPTER SKIP Fwd]	Sets V Threshold Level.	0 – 15 (Default : 10)	[Rev CHAPTER SKIP] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [CHAPTER SKIP Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○

Table 1: key operations in specific-Area setting mode (2/2)

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[PLAY]	All channels that have specific setting data will be canceled, and the specific data will be initialized.	–	The General Setting data will not be changed.	○	×
[CLEAR]	Specific-Channel Setting mode: If the currently selected channel has its specific setting, that setting will be canceled. (By canceling the specific setting for that channel, the number of remaining channels that can have specific settings will be increased by one.) General Setting mode: Settings of General Setting mode are initialized.	–	Specific-Channel Setting mode: All specific data are initialized. The General Setting data will not be changed. General Setting mode: All general setting data are reset to default. The specific setting data will not be changed (will be retained).	○	○
[PAUSE]	The specific-channel-setting data for the currently selected channel are reset to default.	–	The General Setting data will not be changed (will be retained).	○	×
[ESC]	To quit Setting mode for a specific area and clear the on-screen display.	–	–	○	○

Notes:
- Each key listed in Table 1 above is active only while the tuner is completely stopped.
- The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.

A

B

C

D

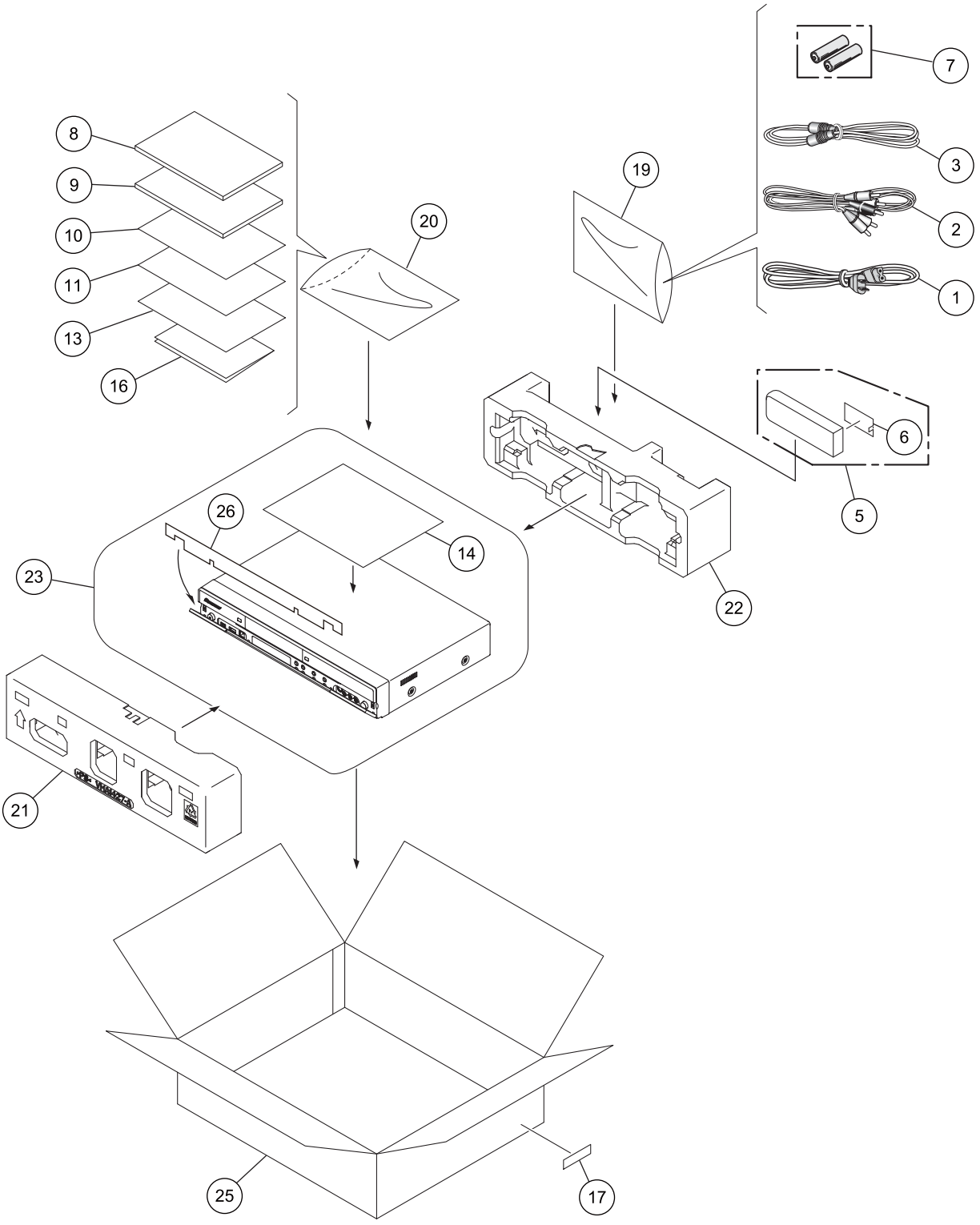
E

F

9. EXPLODED VIEWS AND PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *Screws adjacent to ▼ mark on product are used for disassembly.*
● *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

9.1 PACKING SECTION



(1) PACKING SECTION PARTS LIST

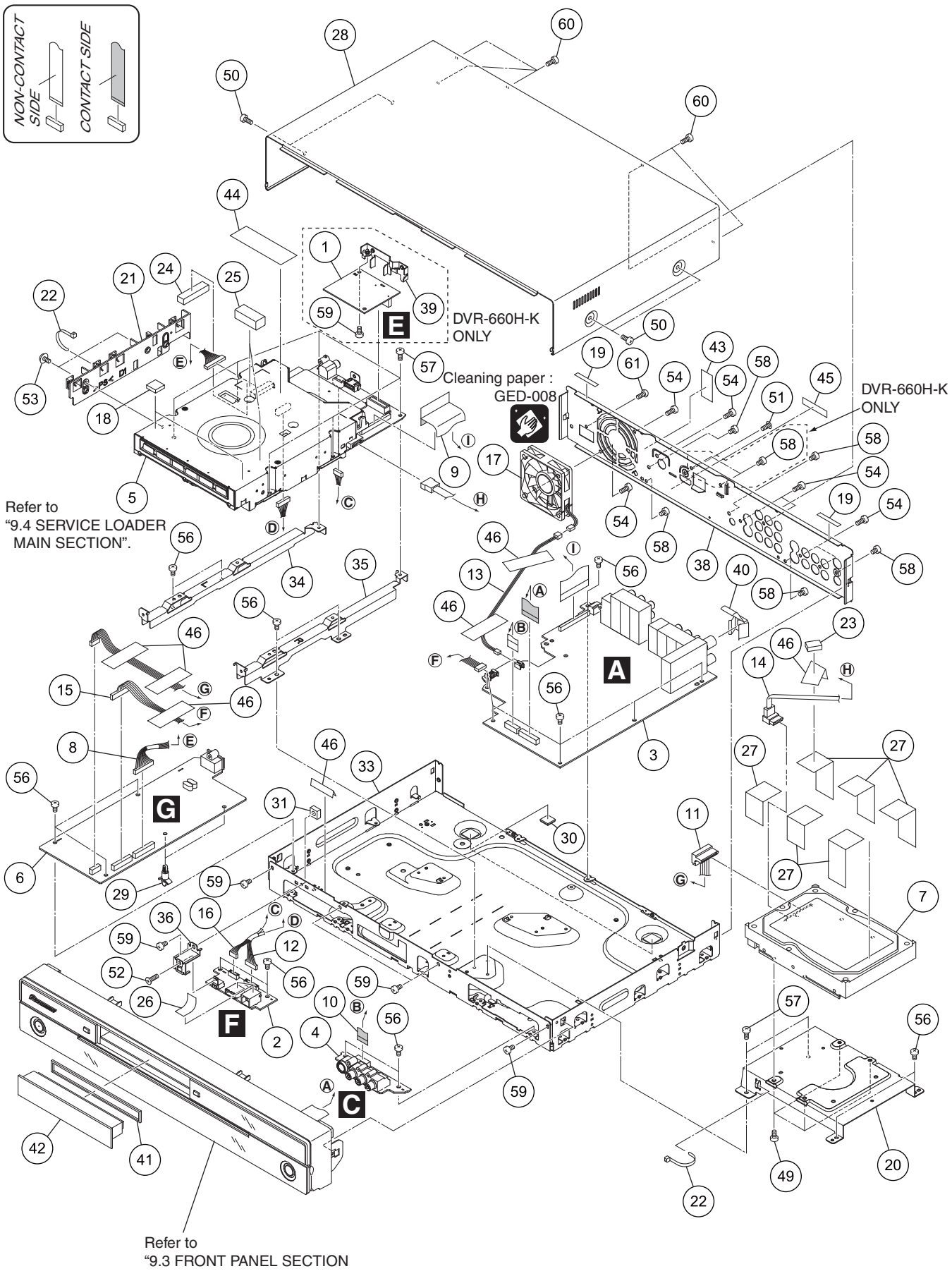
Mark	No.	Description	Part No.
⚠	1	Power Cable	ADG7021
	2	Audio / Video Cable (1.5 m) (red/white/yellow)	VDE1077
	3	RF Antenna Cable	VDE1088
	4	• • • • •	
	5	Remote Control	VXX3288
	6	Battery Cover	VZN1025
NSP	7	Dry Cell Batteries (AA/R6P)	VEM1010
	8	Operating Instructions (English)	VRB1490
	9	Operating Instructions (French)	VRC1461
	10	Quick Start Guide (English)	VRG1025
	11	Quick Start Guide (French)	VRG1026
	12	• • • • •	
	13	HDD Caution 8L	VRR1071
	14	HDD Caution 8L B	VRR1076
	15	• • • • •	
NSP	16	Warranty Card	ARY7045
NSP	17	Serial Label S	VRW2188
	18	• • • • •	
	19	Polyethylene Bag B5	VHL1088
	20	Polyethylene Bag B5	VHL1088
	21	Front Pad	VHA1427
	22	Rear Pad	VHA1428
	23	Mirror Mat	VHL1095
	24	• • • • •	
	25	Packing Case	See Contrast table (2)
	26	Mirror Sheet	VHL1117

(2) CONTRAST TABLE

DVR-660H-K/KCXV, DVR-560H-K/KCXV and DVR-460H-K/KCXV are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-660H-K /KCXV	DVR-560H-K /KCXV	DVR-460H-K /KCXV
	25	Packing Case	YHG1012	YHG1013	YHG1033

9.2 EXTERIOR SECTION



(1) EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	ETAB Assy	See Contrast table (2)
	2	SERVICE DVUB Assy	YXX1001
	3	SERVICE TUJB Assy	YXX1011
	4	SERVICE FRJB Assy	YXX1004
NSP	5	SERVICE LOADER MAIN	See Contrast table (2)
⚠	6	POWER SUPPLY Assy	VWR1408
	7	HDD	See Contrast table (2)
	8	Connector Assy	PF13PP-S17
	9	Flexible Cable (40P)	VDA2159
	10	Flexible Cable (11P)	VDA2162
	11	Housing Assy (4P)	VKP2389
	12	Housing Assy (10P)	VKP2391
	13	Housing Assy (2P)	VKP2392
	14	SATA Cable	YDX1001
	15	Housing Assy (TUJB)	YKP1001
	16	Housing Assy (6P)	YKP1002
	17	DC Fan Motor 60	VXM1123
	18	Spacer Cushion	VEB1400
	19	Cushion	VEB1401
NSP	20	HDD Stay	VNE2450
	21	Cord Holder	VNL1971
NSP	22	Binder (BK-1)	ZCA-BK1
	23	Rubber Spacer	VEB1378
	24	Rubber Spacer	VEB1408
	25	Gasket 30 x 10T	VEC2522
	26	Aluminum Tape 13 x 25	VEF1068
	27	Aluminum Tape 70 x 19	YEF1001
	28	Bonnet S	YXX1009
	29	PCB Support	AEC1215
	30	Rubber Foot	VEB1349

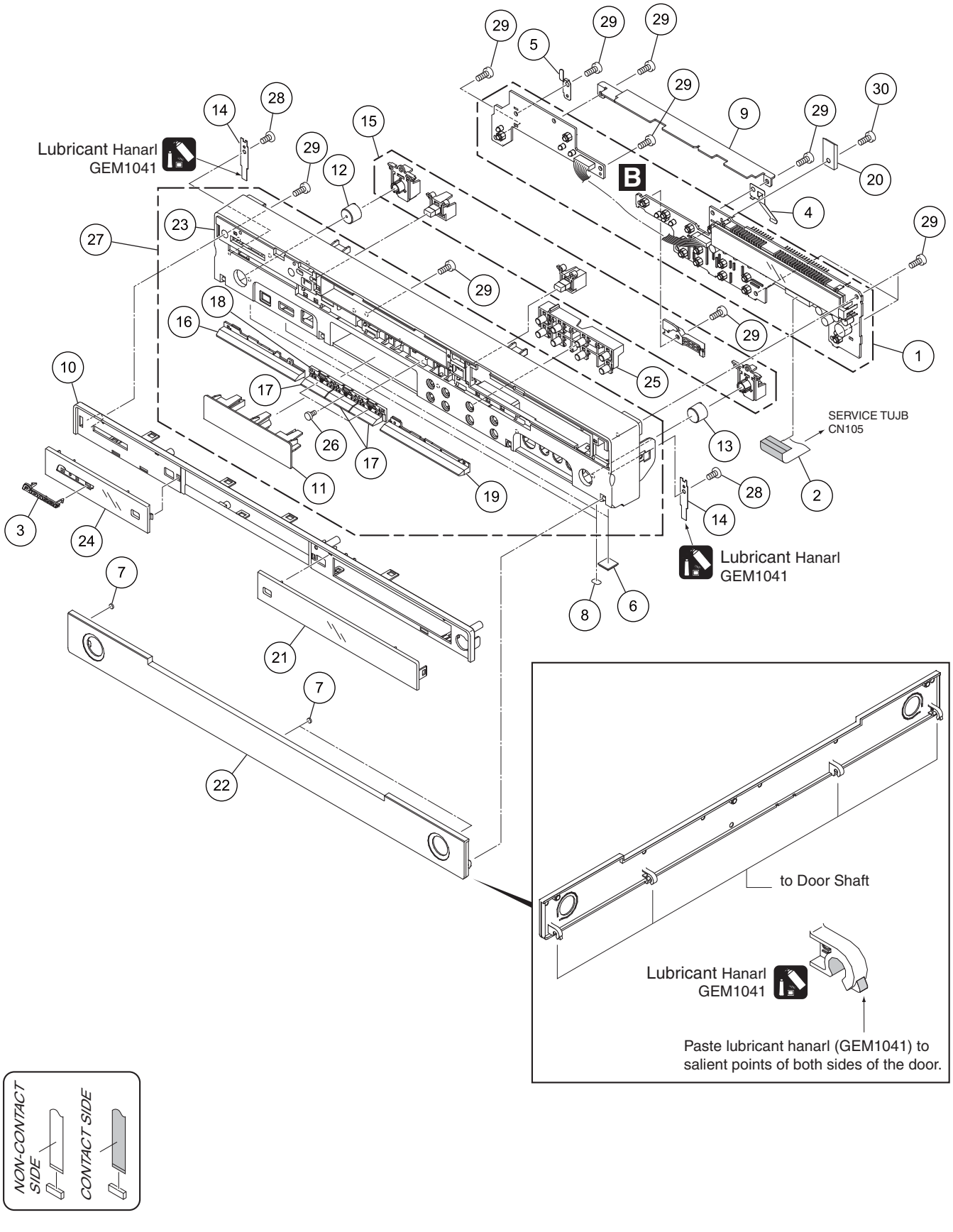
Mark	No.	Description	Part No.
	31	Screw Guard	VEB1399
	32	• • • • •	
NSP	33	Base Chassis	VNB1057
NSP	34	Writer Stay L	VNE2448
NSP	35	Writer Stay R	VNE2449
	36	DV Angle	VNE2474
	37	• • • • •	
	38	Rear Panel	See Contrast table (2)
	39	LAN Angle	See Contrast table (2)
	40	Earth Plate TU	VBK1173
	41	Tray Sheet	VEC2551
	42	Tray Panel	YNK1038
NSP	43	ID Label Assy	See Contrast table (2)
	44	Laser Caution Label	VRW2262
NSP	45	Serial Label S	VRW2188
NSP	46	Tape	ZTA-156A-19
	47	• • • • •	
	48	• • • • •	
	49	#6-32 Screw	DBA1125
	50	Screw	BSZ30P060FTC
	51	Screw M3 x 8	VBA1088
	52	Screw M3 x 8	VBA1088
	53	Screw	AMZ30P060FTC
	54	Screw	BPZ30P080FTC
	55	Screw	BPZ30P080FTC
	56	Screw	BSR30P060FTC
	57	Screw	BSR30P080FTB
	58	Screw	BPZ30P040FTC
	59	Screw	BSZ30P040FTC
	60	Screw	BSZ30P060FBN
	61	Screw	PBZ30P080FTC

(2) CONTRAST TABLE

DVR-660H-K/KCXV, DVR-560H-K/KCXV and DVR-460H-K/KCXV are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-660H-K /KCXV	DVR-560H-K /KCXV	DVR-460H-K /KCXV
	1	ETAB Assy	VWV2344	Not used	Not used
NSP	5	SERVICE LOADER MAIN	VXU1014	VXU1013	VXU1013
	7	HDD	VXF1131	VXF1152	VXF1152
	38	Rear Panel	YNA1034	YNA1035	YNA1043
	39	LAN Angle	YNE1001	Not used	Not used
NSP	43	ID Label Assy	VXW1019	VXW1015	VXW1015

9.3 FRONT PANEL SECTION


Lubricant Hanarl GEM1041
SERVICE TUJB CN105
Lubricant Hanarl GEM1041
to Door Shaft
Lubricant Hanarl GEM1041
Paste lubricant hanarl (GEM1041) to salient points of both sides of the door.
NON-CONTACT SIDE
CONTACT SIDE

(1) FRONT PANEL SECTION PARTS LIST

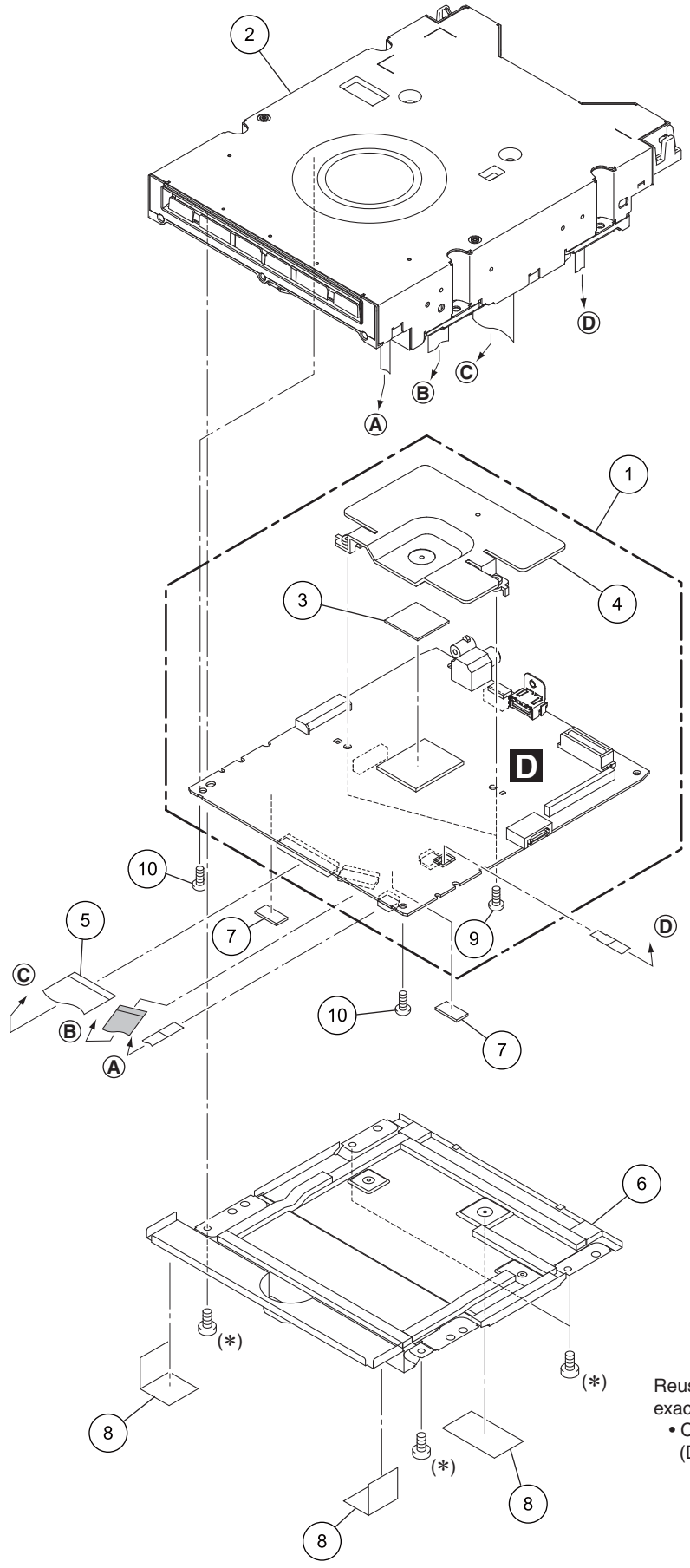
Mark	No.	Description	Part No.
	1	SERVICE FLKY Assy	YXX1007
	2	Flexible Cable (17P)	YDA1002
	3	Pioneer Name Plate	VAM1153
	4	Earth Plate FLKY	VBK1176
	5	Earth Plate	VBK1179
	6	Rubber Foot	VEB1349
	7	Rubber Sheet	VEB1396
	8	Door Cushion	VEC2561
	9	FP Bridge	VNE2464
	10	Panel Frame	VNK6149
	11	CI Cover	VNK6229
	12	Key Top PW	VNK6239
	13	Key Top REC	VNK6240
	14	Door Spring	YBK1001
	15	Main Key	YNK1004
NSP	16	Lens L	YNK1007
NSP	17	Key Lens	YNK1009
NSP	18	Key Base	YNK1010
NSP	19	Lens R	YNK1024
	20	FLKB Holder 2	YNK1043
	21	FL Lens PTD	See Contrast table (2)
	22	Door PTD	See Contrast table (2)
NSP	23	Front Panel PTD	See Contrast table (2)
	24	Sub Panel PTD	YXA1027
	25	Function Key PTD	YXA1054
NSP	26	Tray Screw	DBA1327
	27	Front Panel Assy S	See Contrast table (2)
	28	Flat Head Screw	VBA1113
	29	Screw	BPZ30P080FTC
	30	Screw	BPZ30P120FTB

(2) CONTRAST TABLE

DVR-660H-K/KCXV, DVR-560H-K/KCXV and DVR-460H-K/KCXV are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-660H-K /KCXV	DVR-560H-K /KCXV	DVR-460H-K /KCXV
	21	FL Lens PTD	YXA1036	YXA1011	YXA1049
	22	Door PTD	YXA1037	YXA1037	YXA1050
NSP	23	Front Panel PTD	YXA1058	YXA1058	YXA1059
	27	Front Panel Assy S	YXA1067	YXA1067	YXA1068

9.4 SERVICE LOADER MAIN SECTION



Reuse (∗) marked parts when exachanging SERVICE LOADER Assy.
- Case Screw S (DBA1250) x2

(1) SERVICE LOADER MAIN SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	SERVICE MAIN Assy	See Contrast table (2)
	2	SERVICE LOADER Assy	VXX3306
	3	Radiation Sheet (Silicon)	VEB1360
	4	Heatsink	VNH1079
	5	FFC U11	DDX1208
	6	Low Case U11	DNC1761
	7	Silicon Sheet R9B	DEB1726
NSP	8	Tape	•••••
	9	Screw	BBZ30P060FTC
	10	Screw	DBA1220

(2) CONTRAST TABLE

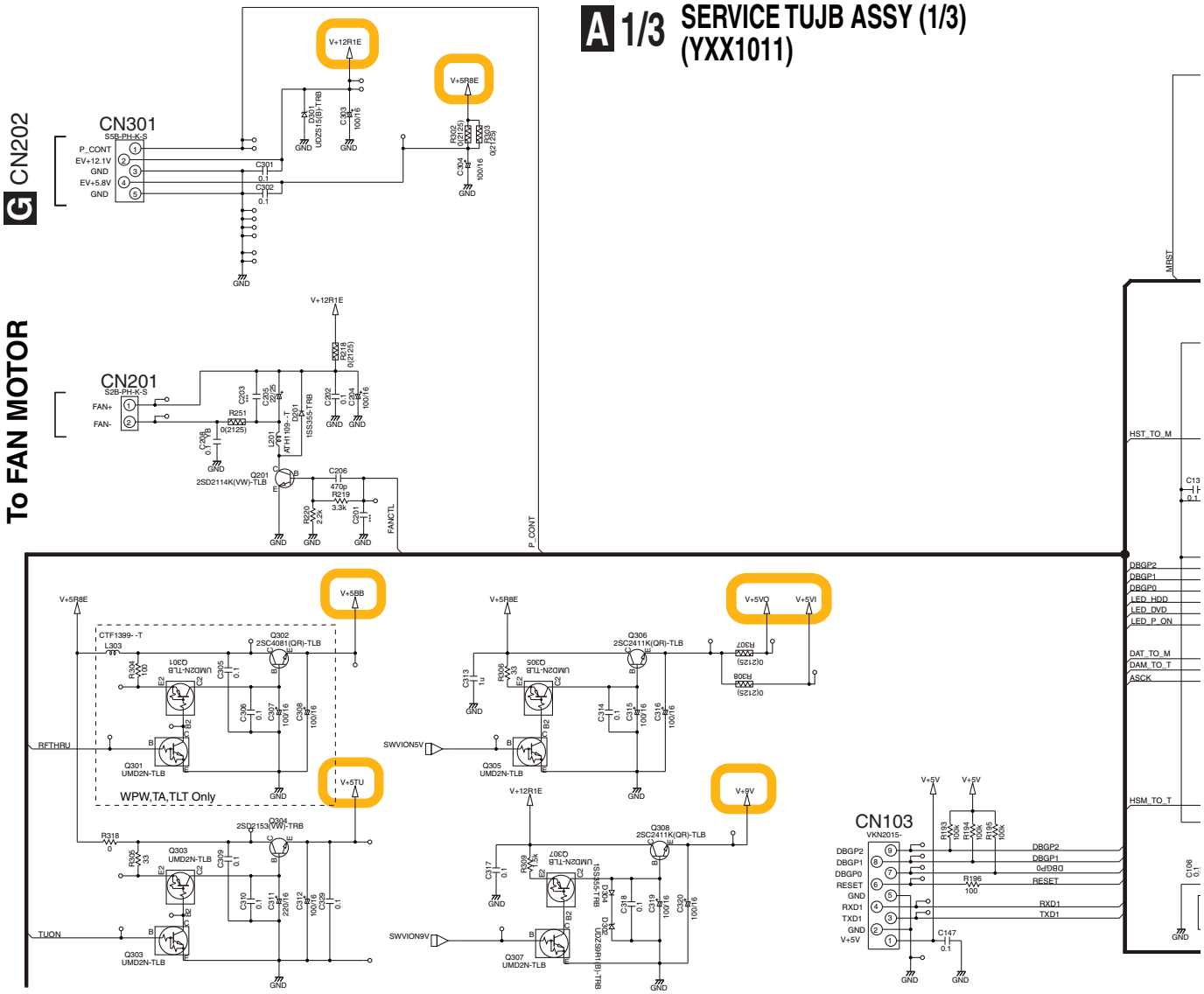
DVR-660H-K/KCXV, DVR-560H-K/KCXV and DVR-460H-K/KCXV are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-660H-K /KCXV	DVR-560H-K /KCXV	DVR-460H-K /KCXV
	1	SERVICE MAIN Assy	VXX3309	VXX3308	VXX3308

10. SCHEMATIC DIAGRAM

10.1 SERVICE TUJB ASSY (1/3)

A 1/3 SERVICE TUJB ASSY (1/3) (YXX1011)

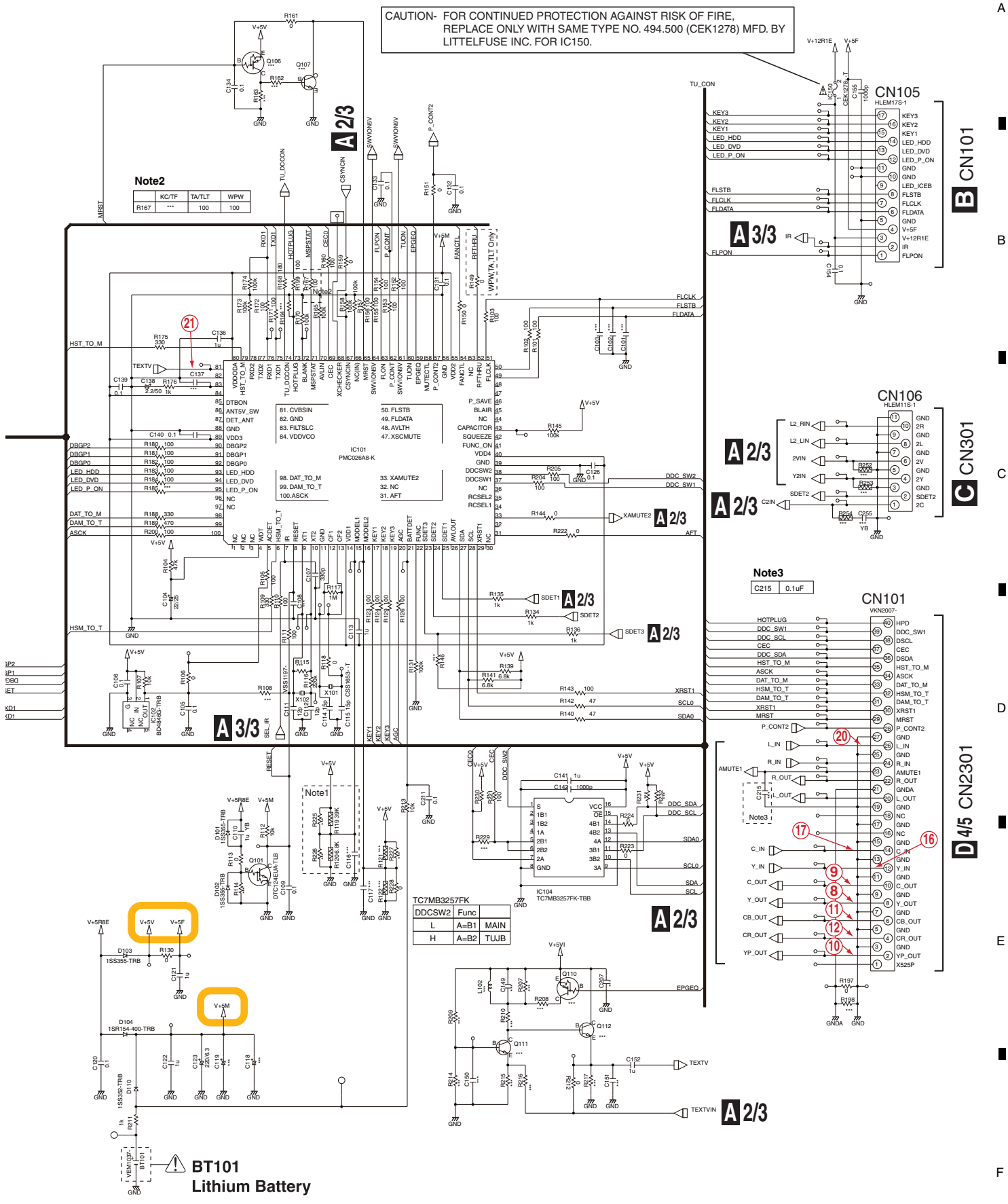


Note1

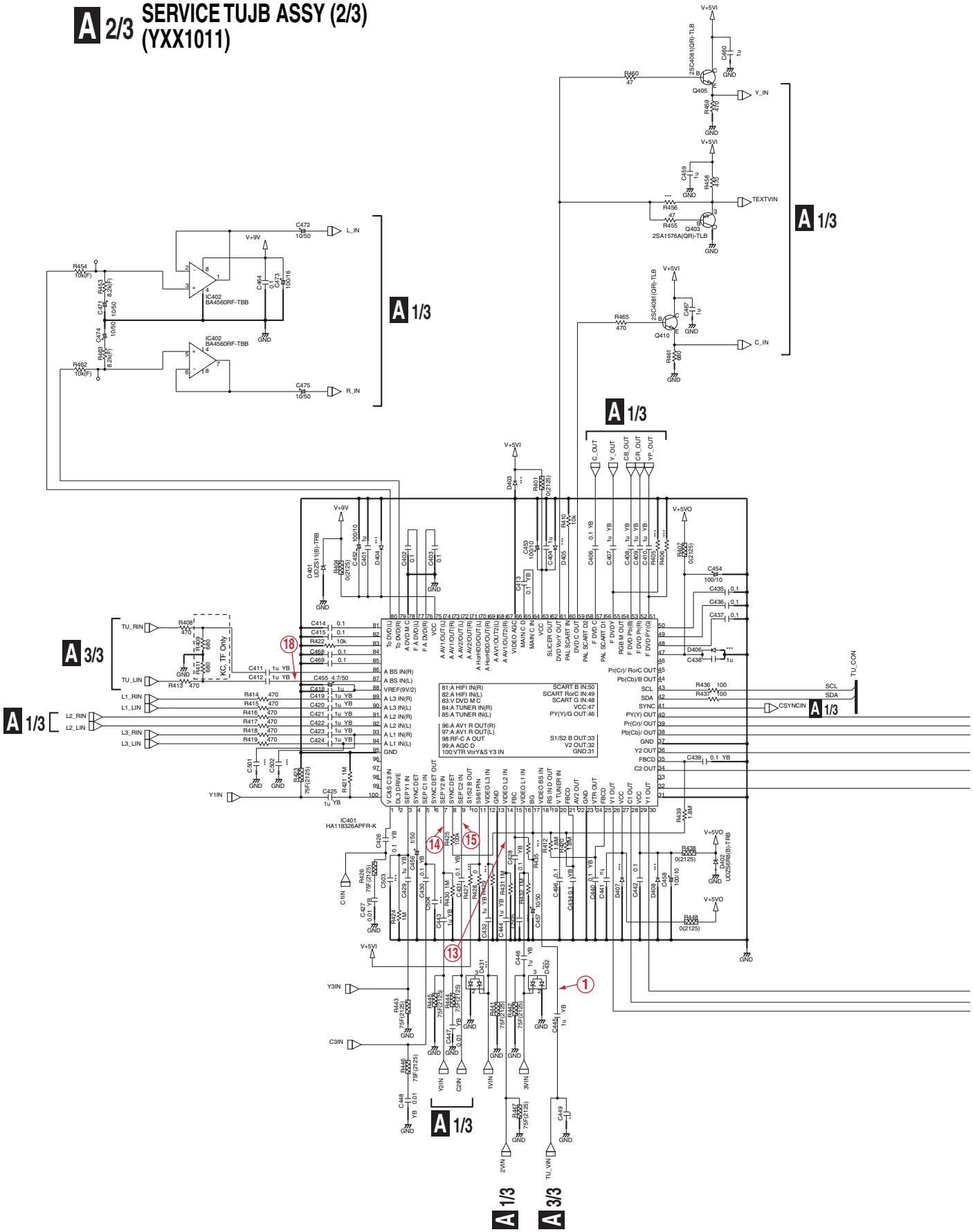
MODEL	KC/TF	TA/TLT	WPW
MI ASSY	YWM1007- /V	YWM1008- /V	YWM1009- /V
AI ASSY	YWV1003- /V	YWV1004- /V	YWV1005- /V
PCB	YNP1007-A		
R119	39k	33k	39k
R120	6.8k	27k	15k

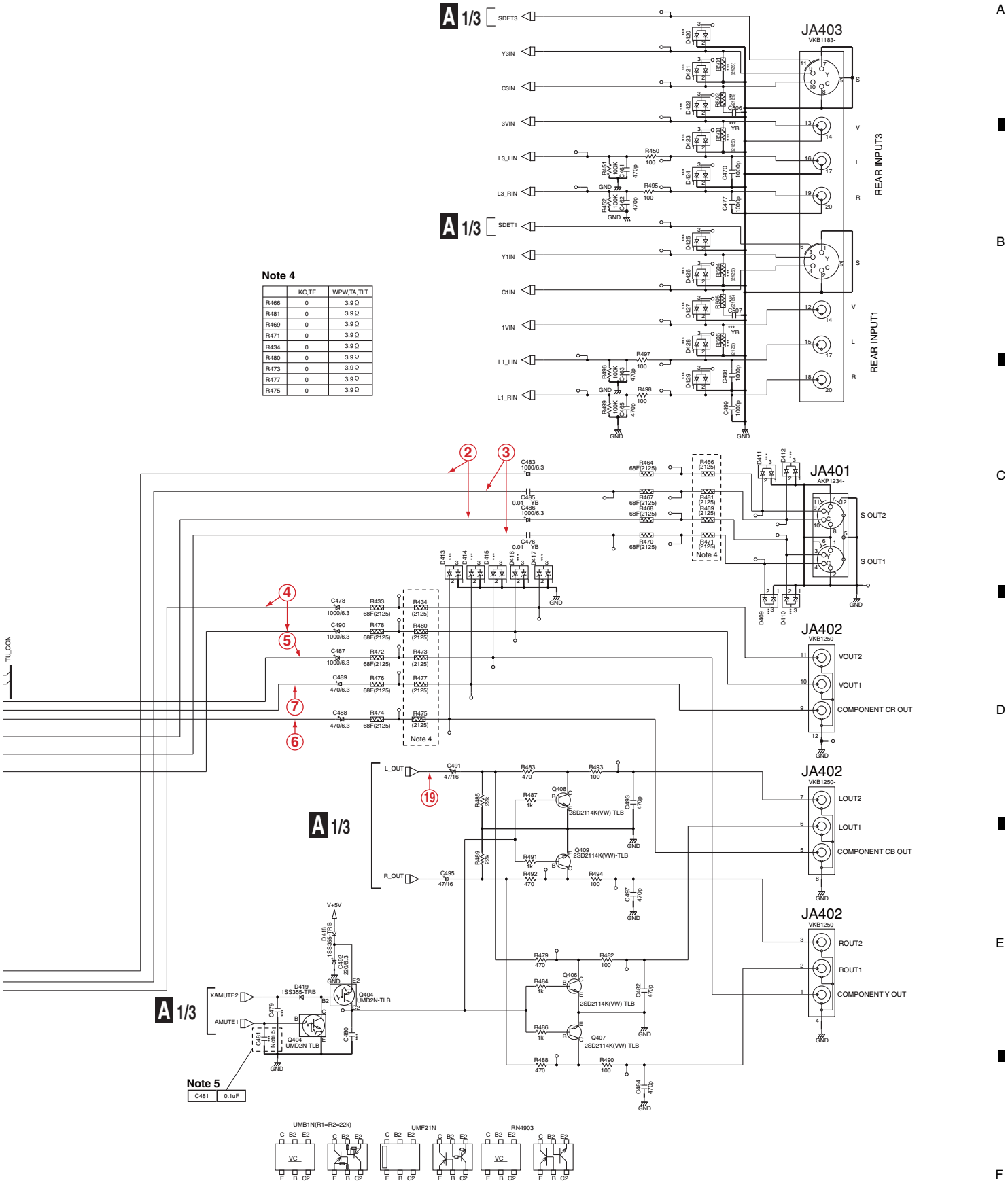
CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. 494.500 (CEK1278) MFD. BY LITTELFUSE FOR IC317.

A 1/3

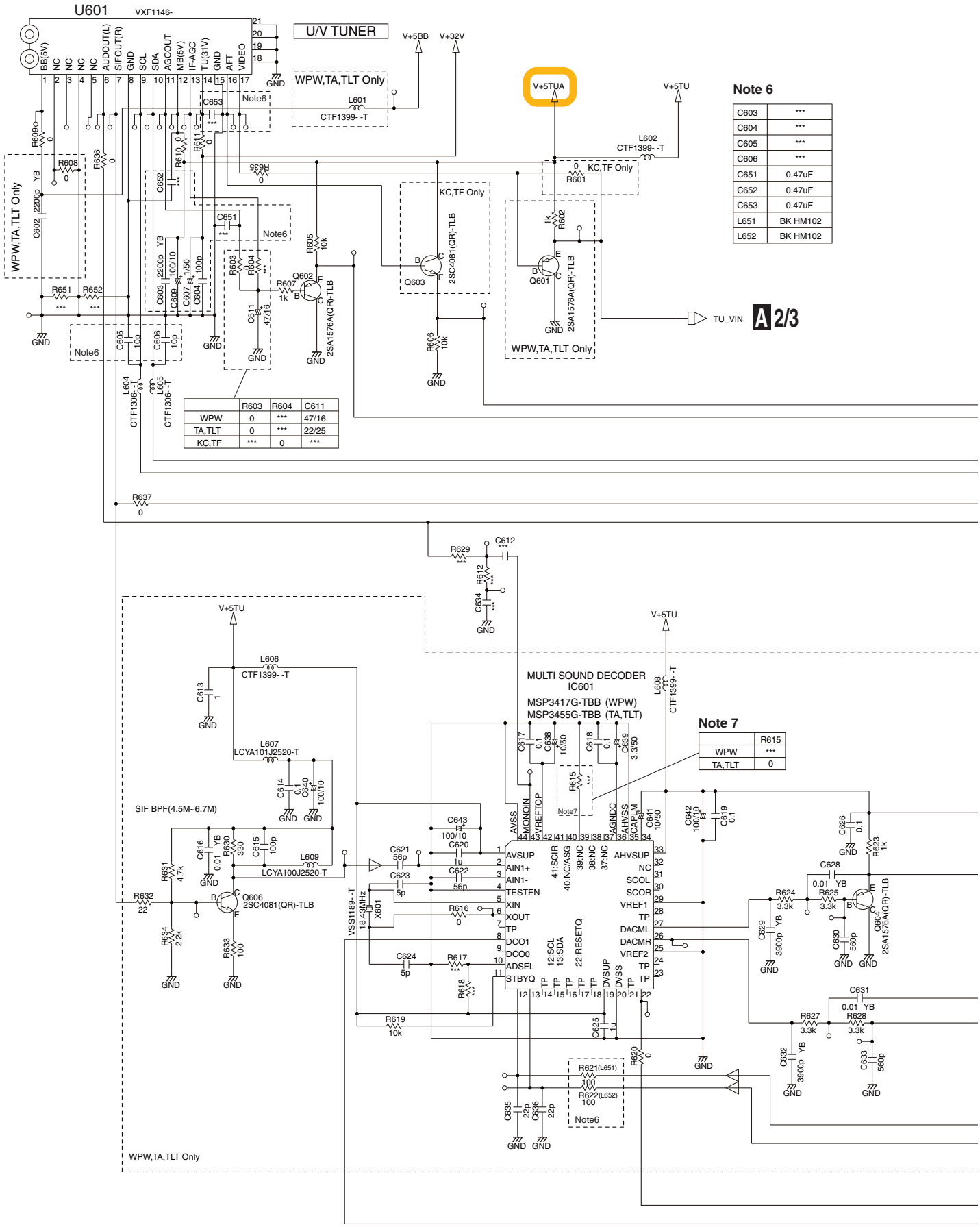

CAUTION- FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. 494.500 (CEK1278) MFD. BY LITTELFUSE INC. FOR IC150.
Note2
KC/TF TA/TLT WPW
R167 *** 100 100
CN105
HLEM17S-1
CN106
HLEM11S-1
CN101
VKN2007-
CN2301
IC101
PMC026A8-K
IC104
TC7MB3257FK-TBB
TC7MB3257FK
DDCSW2 Func
L A=B1 MAIN
H A=B2 TUJB
Note3
C215 0.1uF
BT101
Lithium Battery
A 1/3
A 2/3
A 3/3
B CN101
C CN301
D 4/5 CN2301
DVR-660H-K
107

10.2 SERVICE TUJB ASSY (2/3)




A 1/3
SDET3
Y3IN
C3IN
3VIN
L3_LIN
L3_RIN
JA403
VKB1183-
REAR INPUT3
A 1/3
SDET1
Y1IN
C1IN
1VIN
L1_LIN
L1_RIN
REAR INPUT1
Note 4
KC,TF WPW,TA,TLT
R466 0 3.9Ω
R481 0 3.9Ω
R469 0 3.9Ω
R471 0 3.9Ω
R434 0 3.9Ω
R480 0 3.9Ω
R473 0 3.9Ω
R477 0 3.9Ω
R475 0 3.9Ω
JA401
AKP1234-
S OUT2
S OUT1
JA402
VKB1250-
VOUT2
VOUT1
COMPONENT CR OUT
JA402
VKB1250-
LOUT2
LOUT1
COMPONENT CB OUT
JA402
VKB1250-
ROUT2
ROUT1
COMPONENT Y OUT
TU_CON
L_OUT
R_OUT
A 1/3
V+5V
XAMUTE2
AMUTE1
A 1/3
Note 5
C481 0.1uF
UMB1N(R1=R2=22k)
UMF21N
RN4903

10.3 SERVICE TUJB ASSY (3/3)

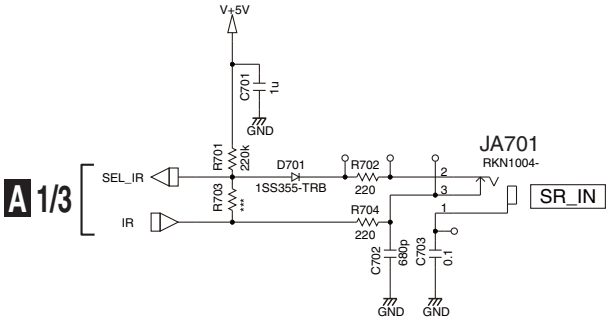


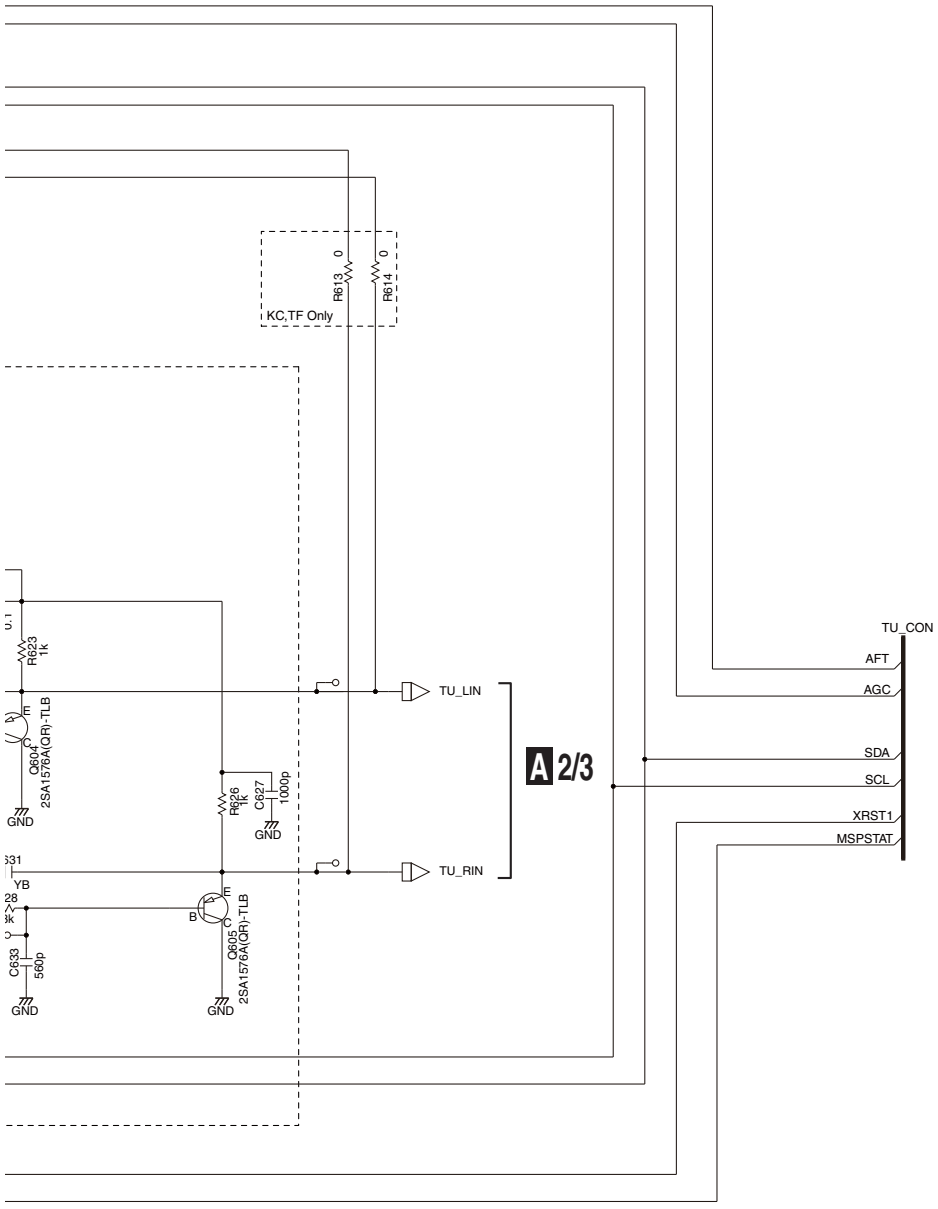
	R603	R604	C611
WPW	0	***	47/16
TA,TLT	0	***	22/25
KC,TF	***	0	***

C603	***
C604	***
C605	***
C606	***
C651	0.47uF
C652	0.47uF
C653	0.47uF
L651	BK HM102
L652	BK HM102

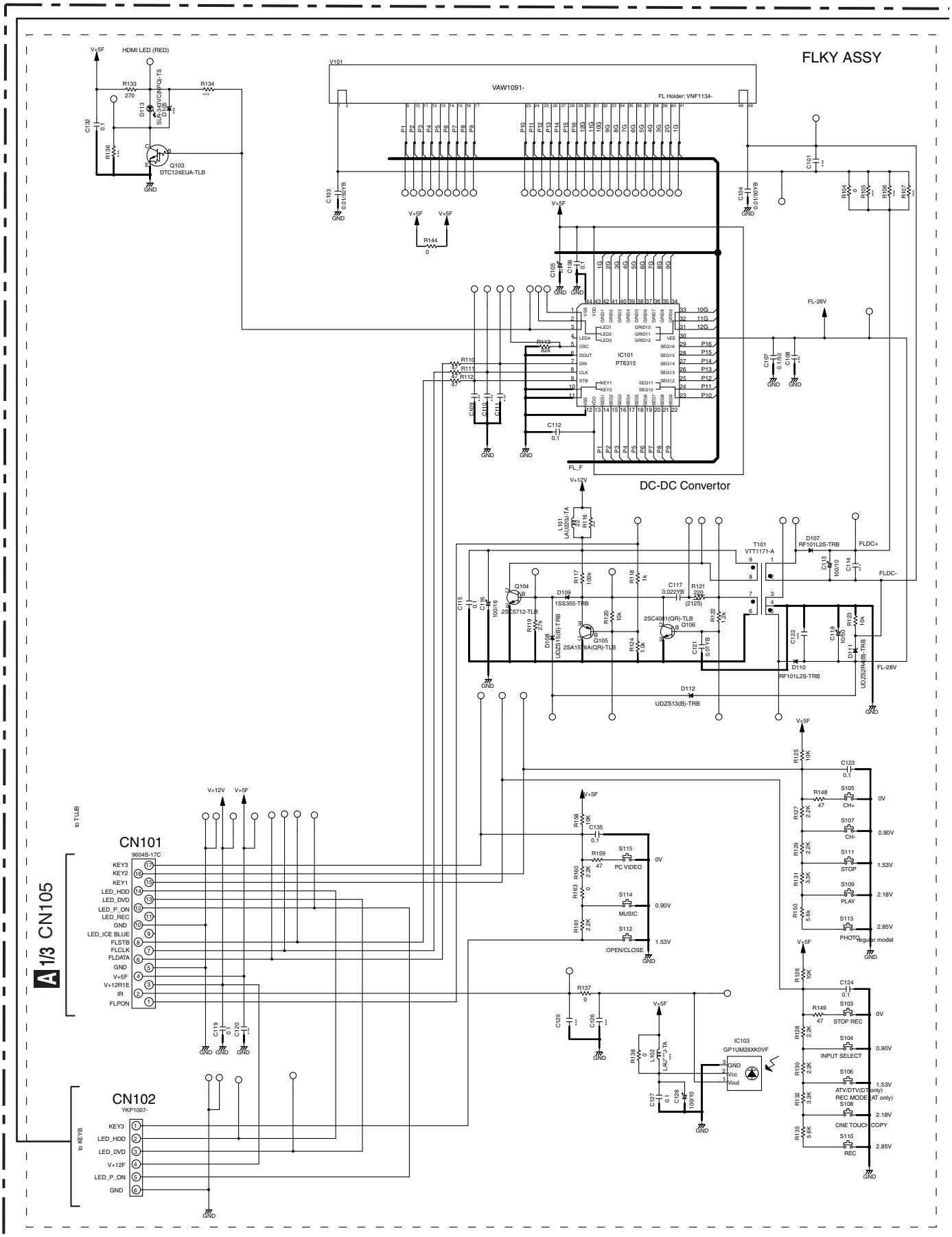
	R615
WPW	***
TA,TLT	0

A 3/3 SERVICE TUJB ASSY (3/3) (YXX1011)



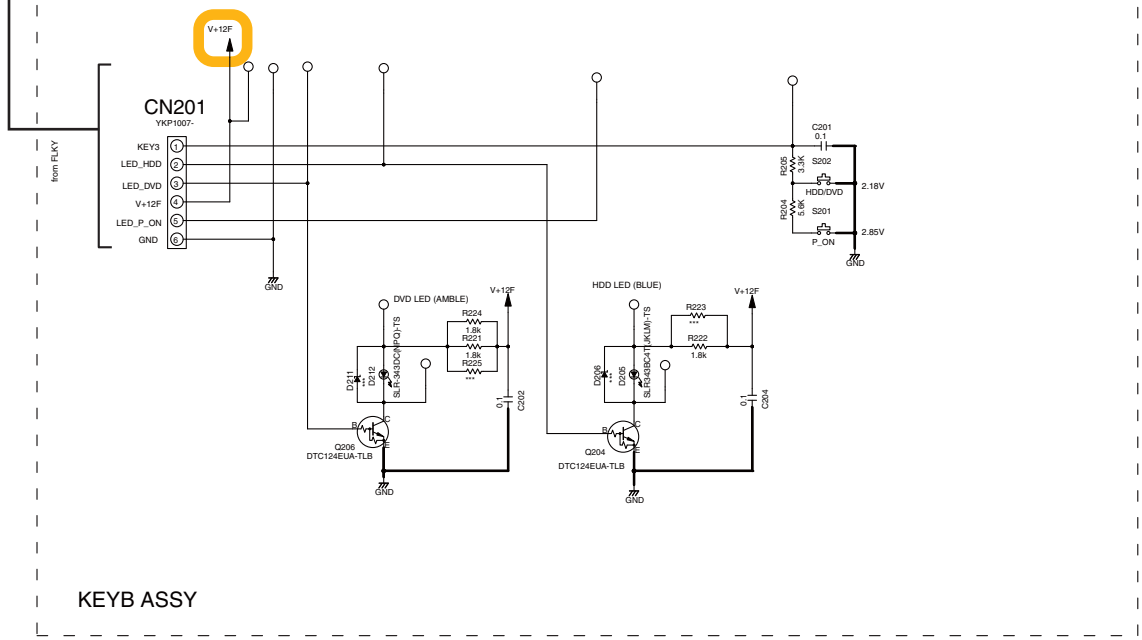


10.4 SERVICE FLKY ASSY

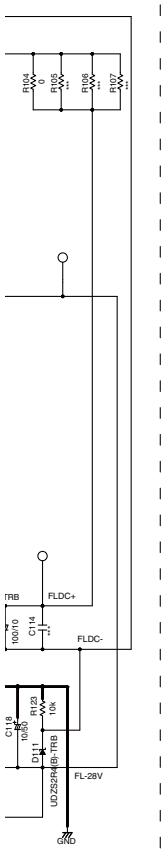


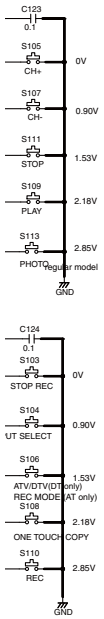
Y ASSY

B SERVICE FLKY ASSY (YXX1007)

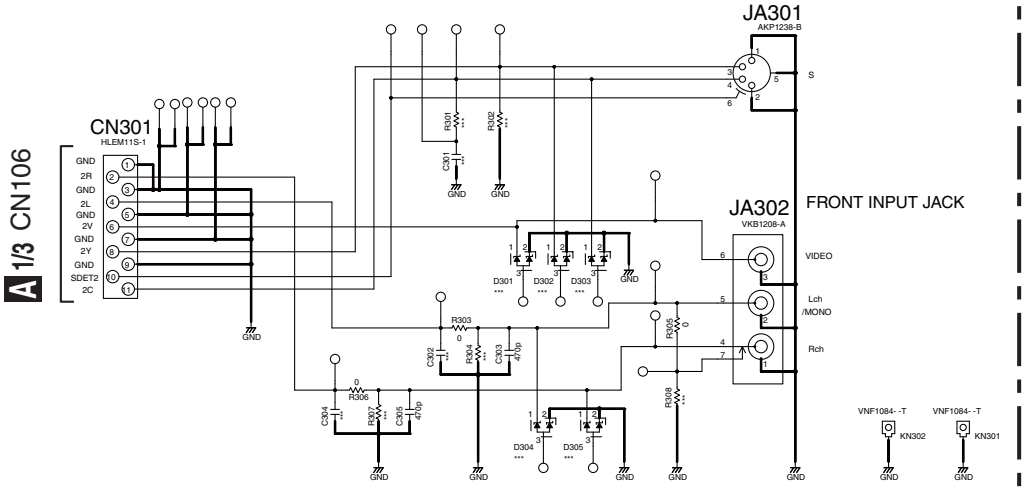


KEYB ASSY



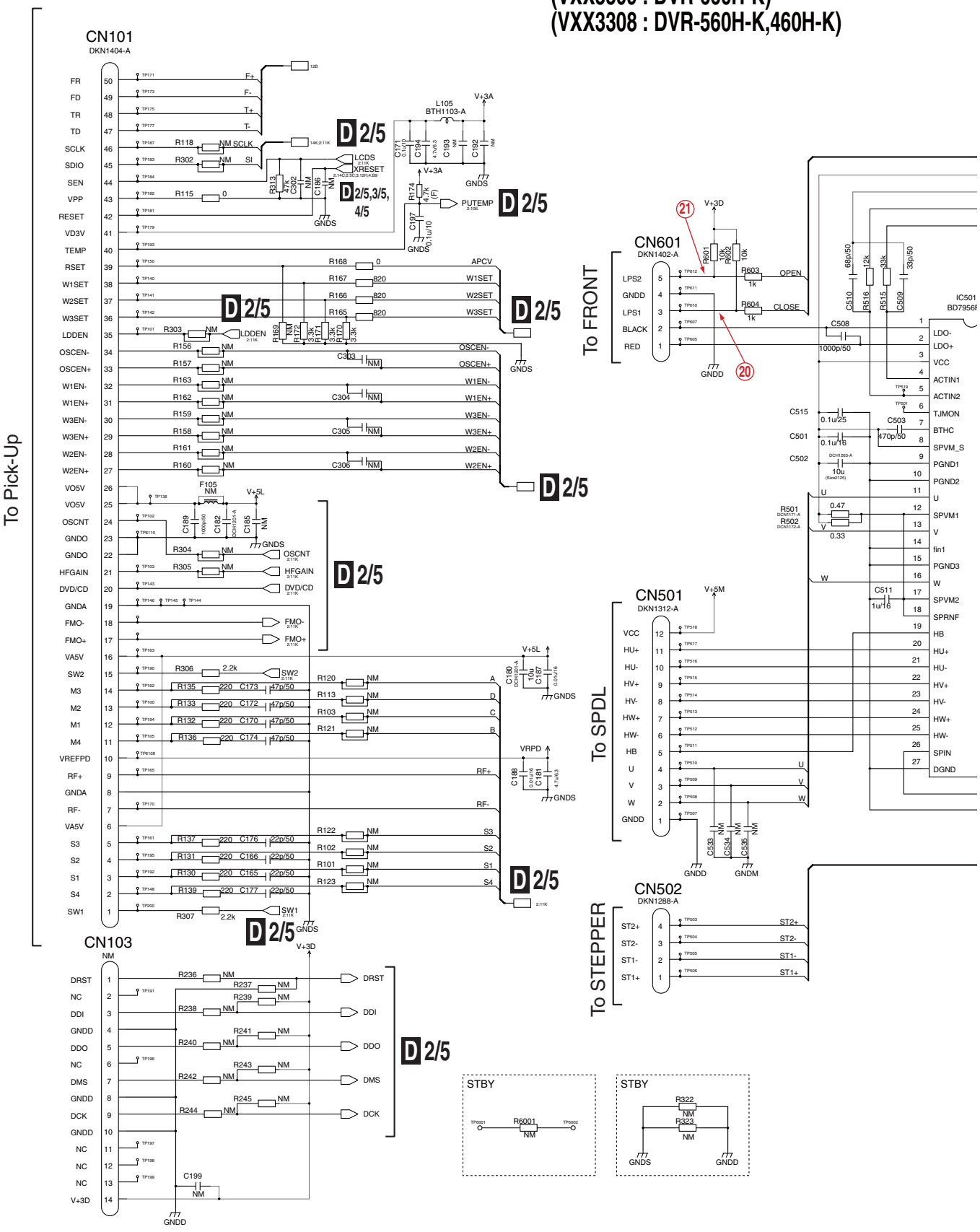


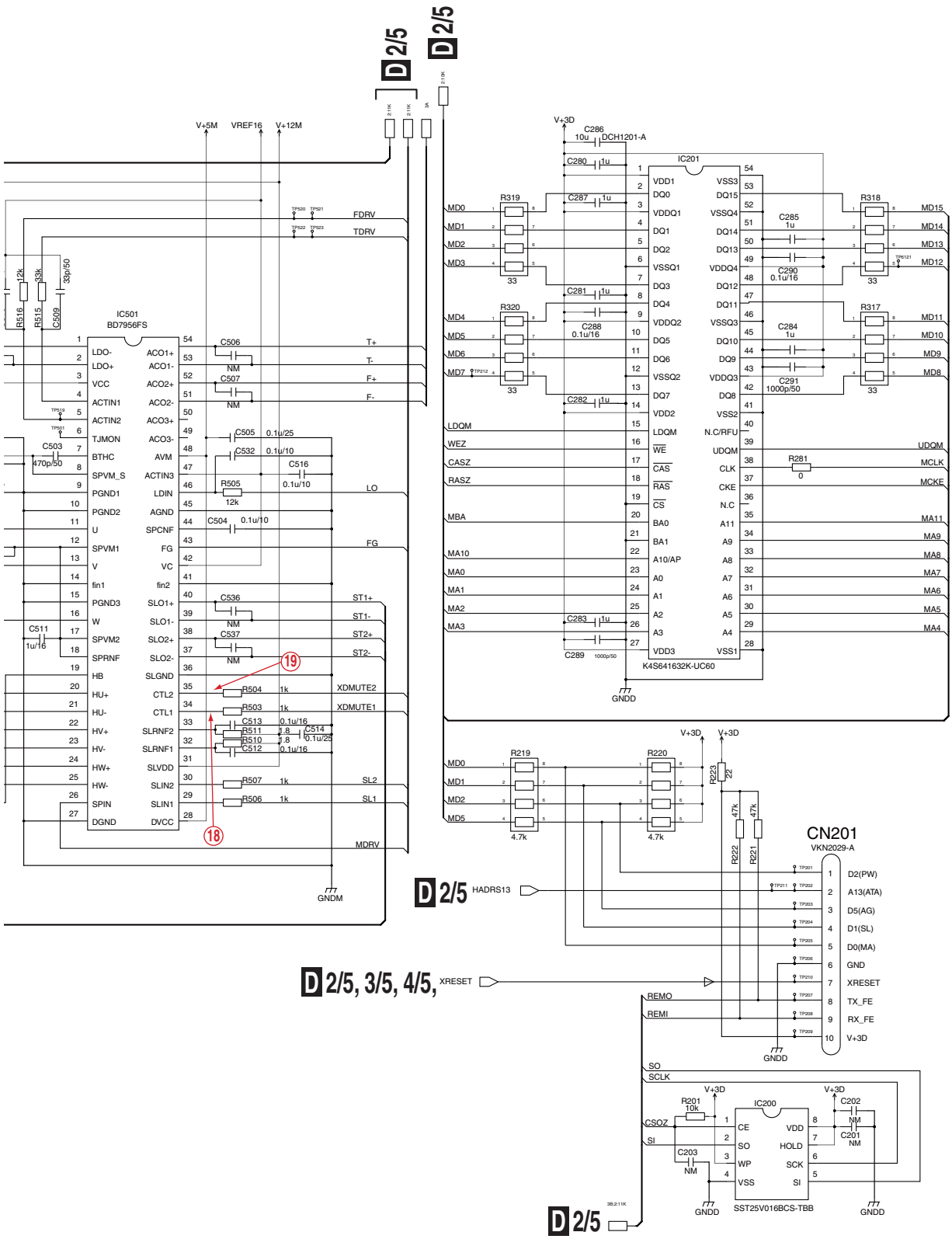
C SERVICE FRJB ASSY (YXX1004)



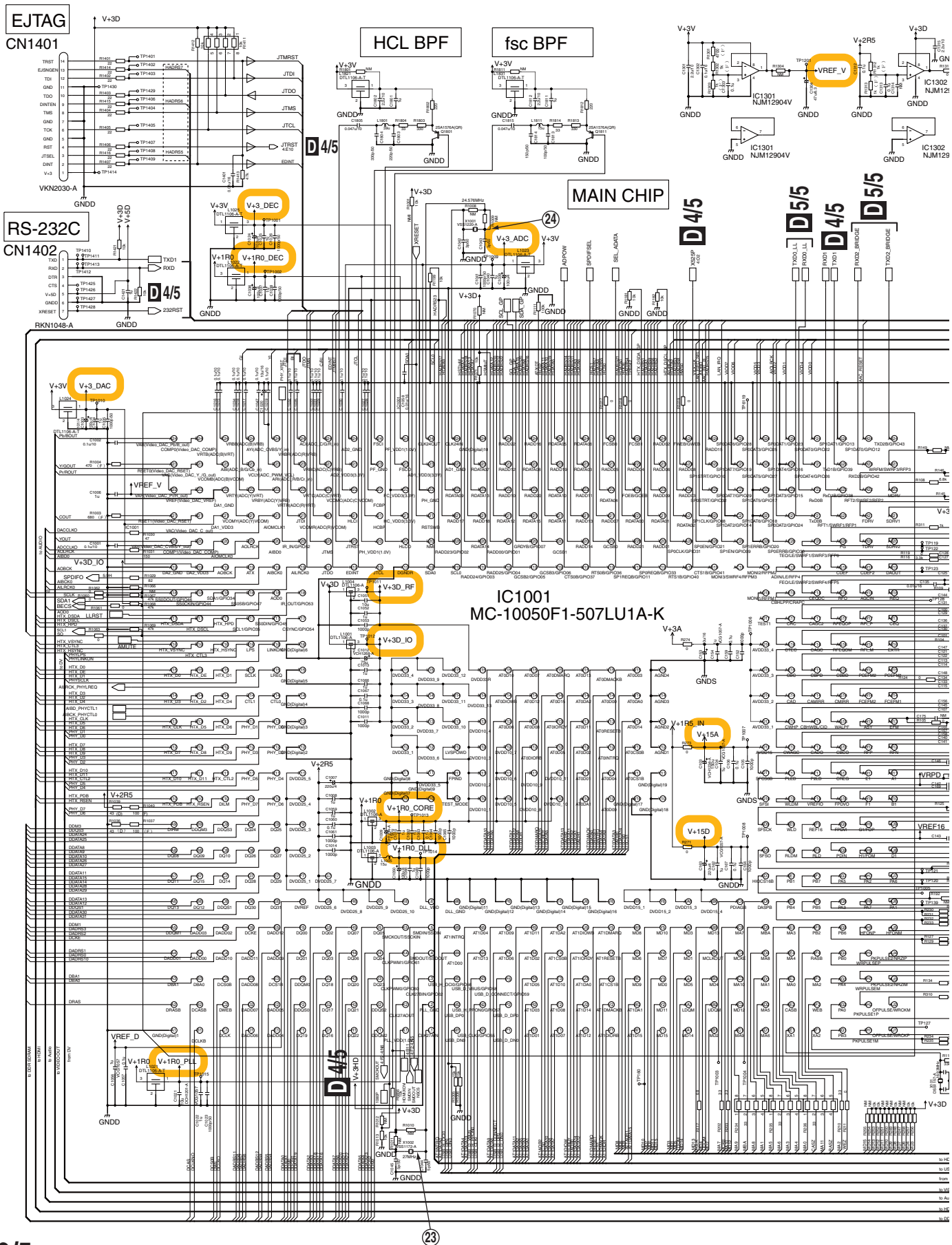
10.5 SERVICE MAIN ASSY (1/5)

D 1/5 SERVICE MAIN ASSY (1/5) (VXX3309 : DVR-660H-K) (VXX3308 : DVR-560H-K,460H-K)

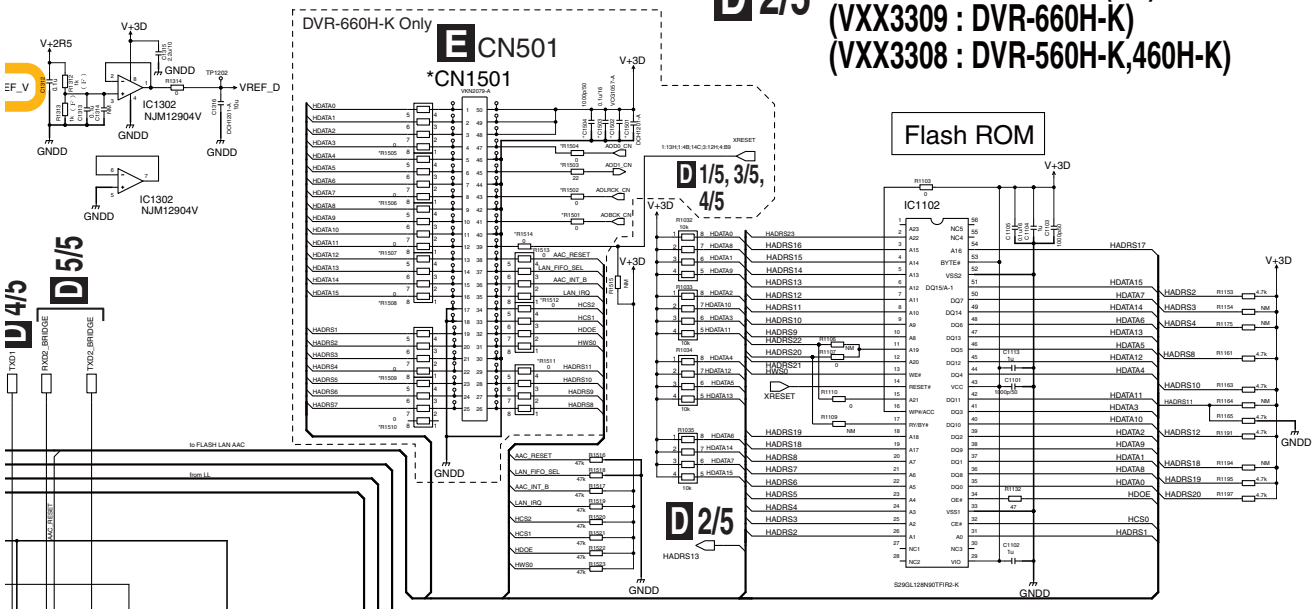


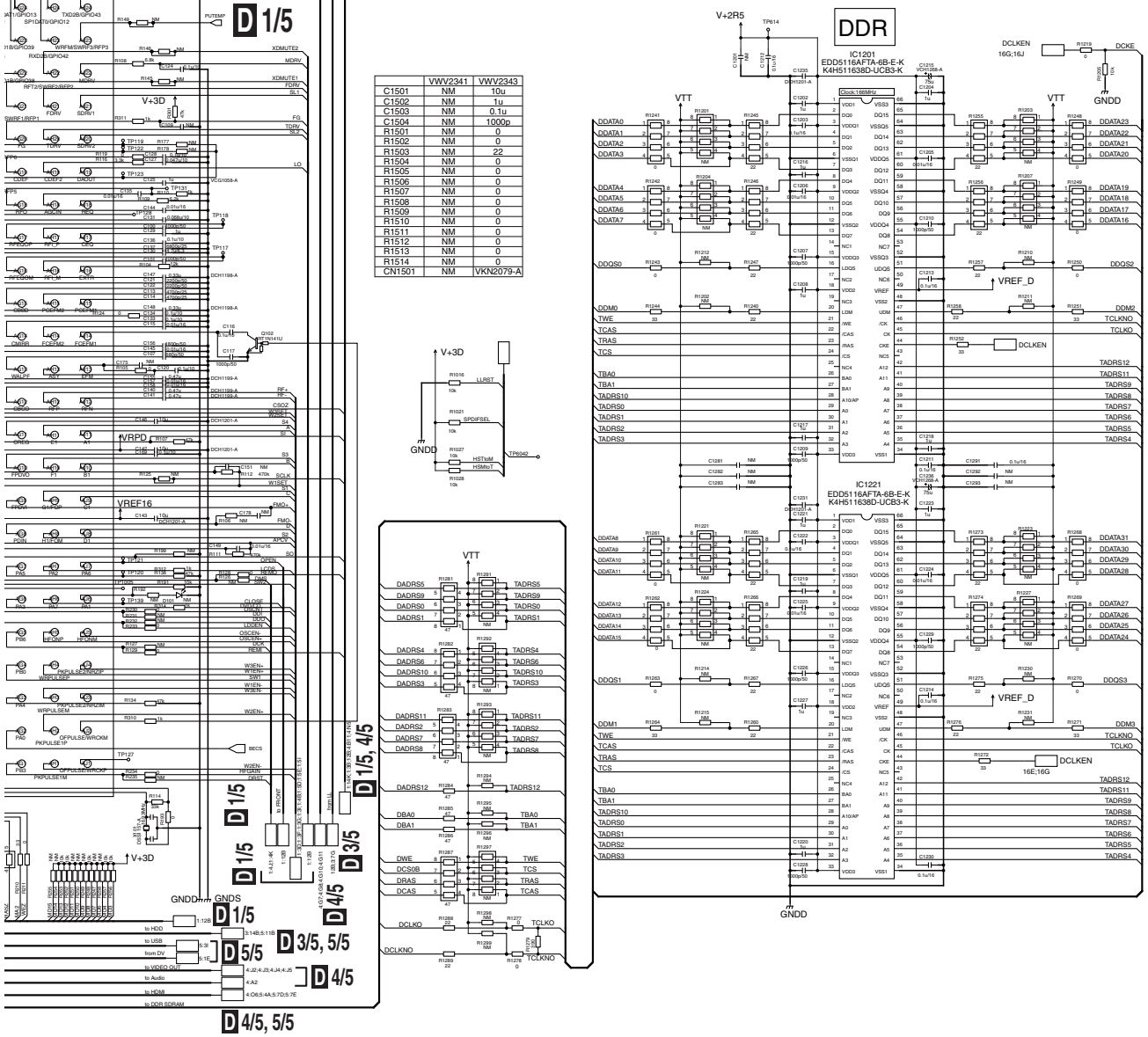

D 2/5
D 2/5
V+5M
VREF16
V+12M
IC501
BD7956FS
LDO-
LDO+
VCC
ACTIN1
ACTIN2
TJMON
BTHC
SPVM_S
PGND1
PGND2
U
SPVM1
V
fin1
PGND3
W
SPVM2
SPRNF
HB
HU+
HU-
HV+
HV-
HW+
HW-
SPIN
DGND
ACO1+
ACO1-
ACO2+
ACO2-
ACO3+
ACO3-
AVM
ACTIN3
LDIN
AGND
SPCNF
FG
VC
fin2
SLO1+
SLO1-
SLO2+
SLO2-
SLGND
CTL2
CTL1
SLRNF2
SLRNF1
SLVDD
SLIN2
SLIN1
DVCC
FDRV
TDRV
T+
T-
F+
F-
LO
FG
ST1+
ST1-
ST2+
ST2-
XDMUTE2
XDMUTE1
SL2
SL1
MDRV
GNDM
R516
12k
R515
33k
C509
33p/50
C503
470p/50
C511
1u/16
C506
C507
C505
0.1u/25
C532
0.1u/10
C516
0.1u/10
R505
12k
C504
0.1u/10
C536
C537
NM
R504
1k
R503
1k
C513
0.1u/16
R511
1.8
R510
1.8
C512
0.1u/16
C514
0.1u/25
R507
1k
R506
1k
19
18
V+3D
C286
10u
DCH1201-A
C280
1u
C287
1u
C281
1u
C288
0.1u/16
C282
1u
C283
1u
C289
1000p/50
IC201
VDD1
DQ0
VDDQ1
DQ1
DQ2
VSSQ1
DQ3
DQ4
VDDQ2
DQ5
DQ6
VSSQ2
DQ7
VDD2
LDQM
WE
CAS
RAS
CS
BA0
BA1
A10/AP
A0
A1
A2
A3
VDD3
VSS3
DQ15
VSSQ4
DQ14
DQ13
VDDQ4
DQ12
DQ11
VSSQ3
DQ10
DQ9
VDDQ3
DQ8
VSS2
N.C/RFU
UDQM
CLK
CKE
N.C
A11
A9
A8
A7
A6
A5
A4
VSS1
K4S641632K-UC60
GNDD
C285
1u
C290
0.1u/16
C284
1u
C291
1000p/50
R319
R320
R318
R317
33
MD0
MD1
MD2
MD3
MD4
MD5
MD6
MD7
MD15
MD14
MD13
MD12
MD11
MD10
MD9
MD8
LDQM
WEZ
CASZ
RASZ
MBA
MA10
MA0
MA1
MA2
MA3
UDQM
MCLK
MCKE
MA11
MA9
MA8
MA7
MA6
MA5
MA4
R281
0
R219
R220
4.7k
R223
22
R222
R221
47k
CN201
VKN2029-A
D2(PW)
A13(ATA)
D5(AG)
D1(SL)
D0(MA)
GND
XRESET
TX_FE
RX_FE
V+3D
D 2/5
HADRS13
D 2/5, 3/5, 4/5,
XRESET
REMO
REMI
SO
SCLK
CSOZ
SI
R201
10k
IC200
CE
SO
WP
VSS
VDD
HOLD
SCK
SI
C202
NM
C201
NM
C203
NM
SST25V016BCS-TBB
D 2/5

10.6 SERVICE MAIN ASSY (2/5)



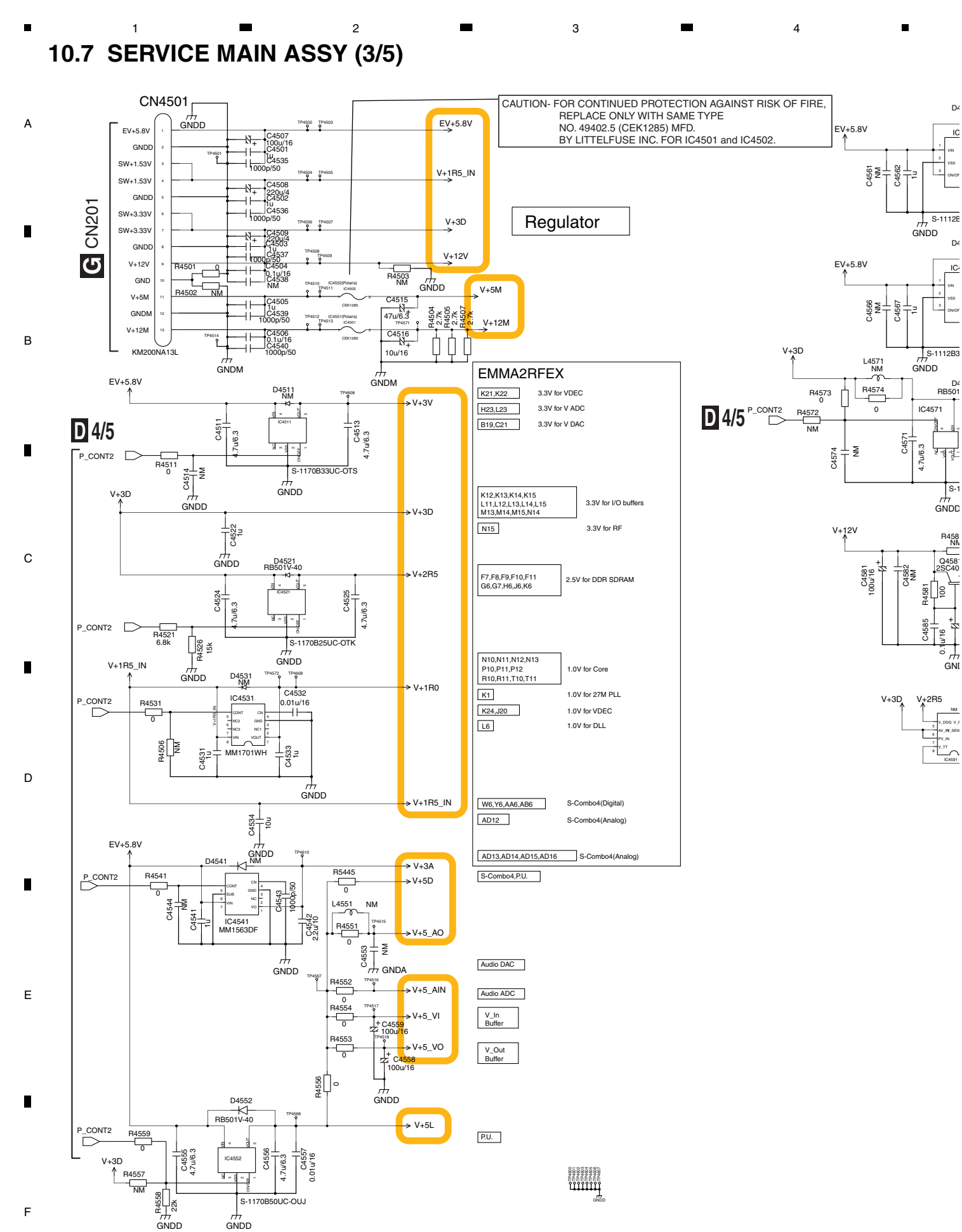
D 2/5 SERVICE MAIN ASSY (2/5) (VXX3309 : DVR-660H-K) (VXX3308 : DVR-560H-K,460H-K)



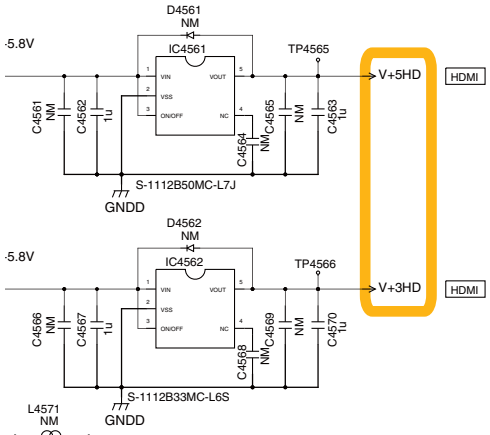


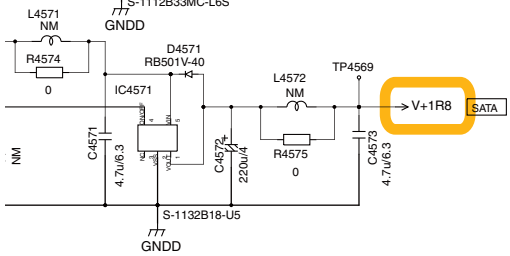
	VWV2341	VWV2343
C1501	NM	10u
C1502	NM	1u
C1503	NM	0.1u
C1504	NM	1000p
R1501	NM	0
R1502	NM	0
R1503	NM	22
R1504	NM	0
R1505	NM	0
R1506	NM	0
R1507	NM	0
R1508	NM	0
R1509	NM	0
R1510	NM	0
R1511	NM	0
R1512	NM	0
R1513	NM	0
R1514	NM	0
CN1501	NM	VKN2079-A

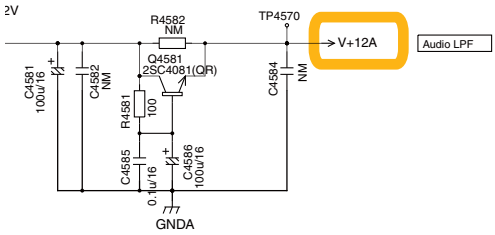
10.7 SERVICE MAIN ASSY (3/5)

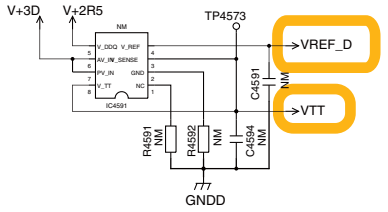


D 3/5 SERVICE MAIN ASSY (3/5) (VXX3309 : DVR-660H-K) (VXX3308 : DVR-560H-K,460H-K)



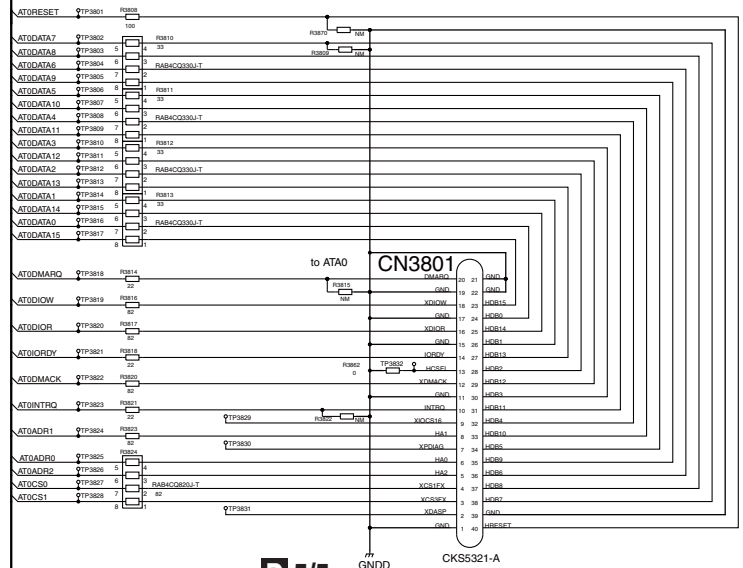




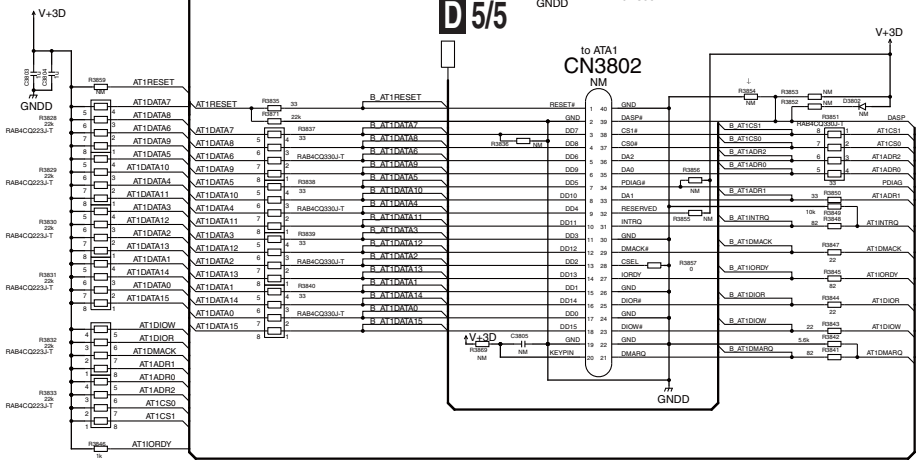


IDE I/F

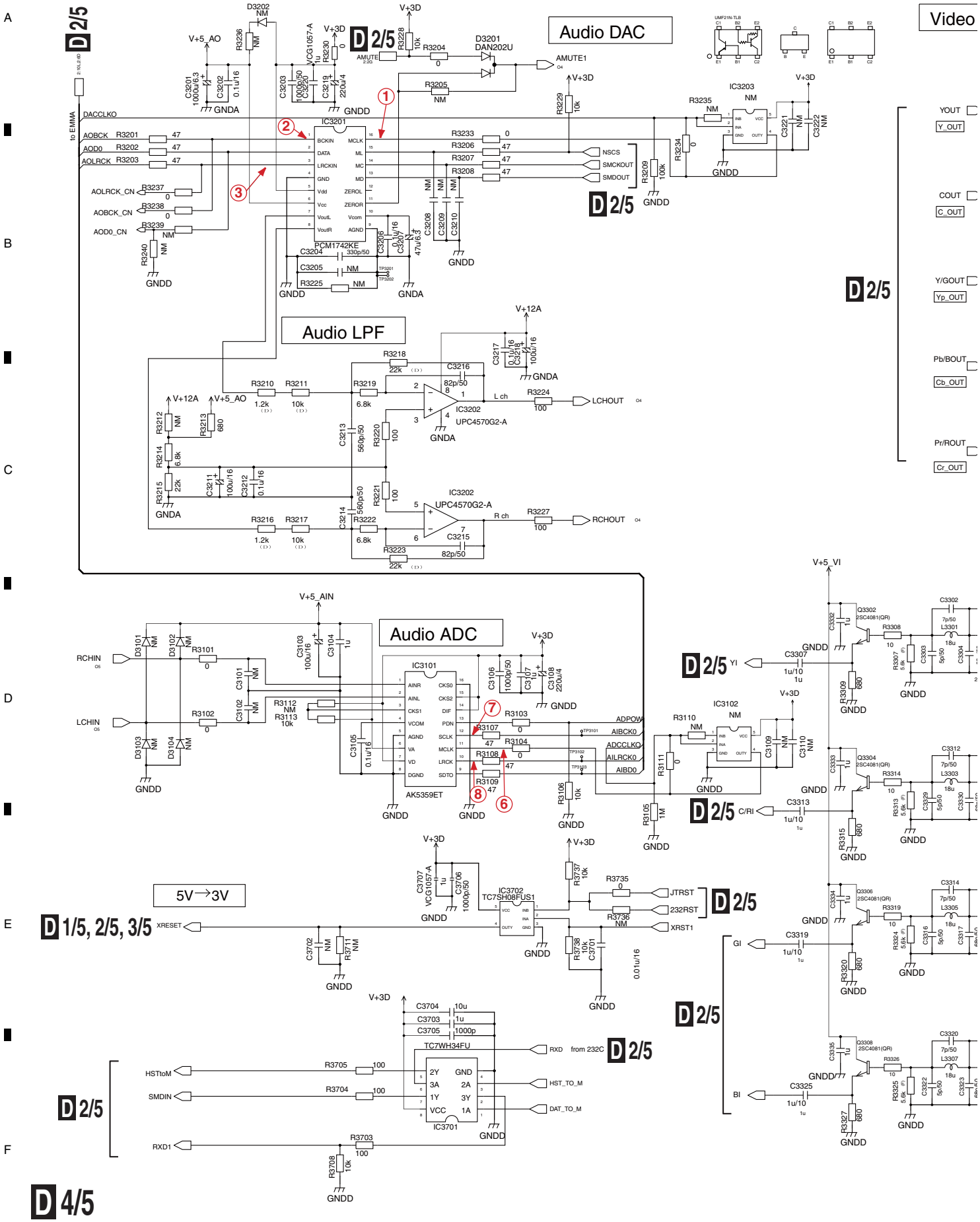
D 2/5, 5/5

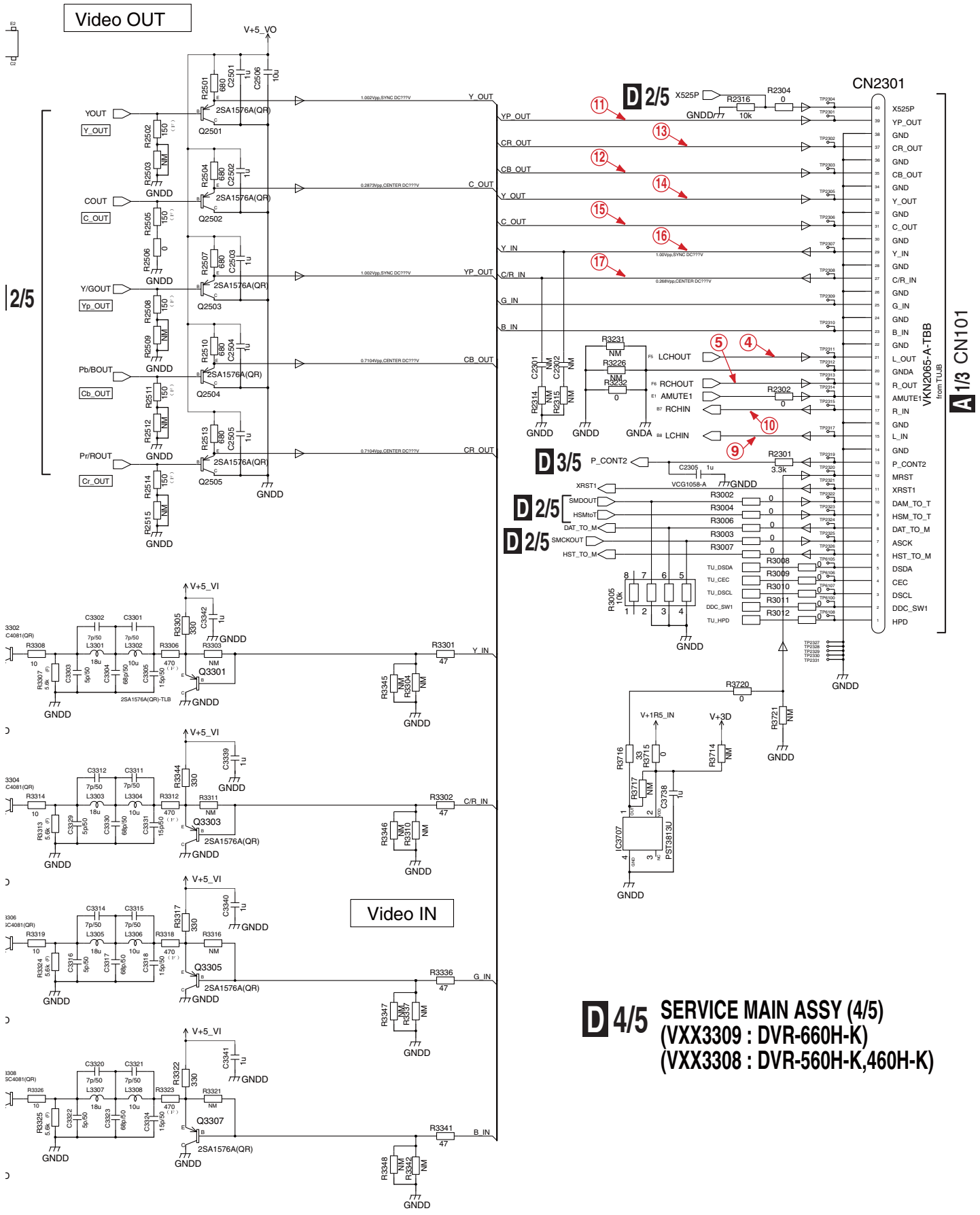


D 5/5



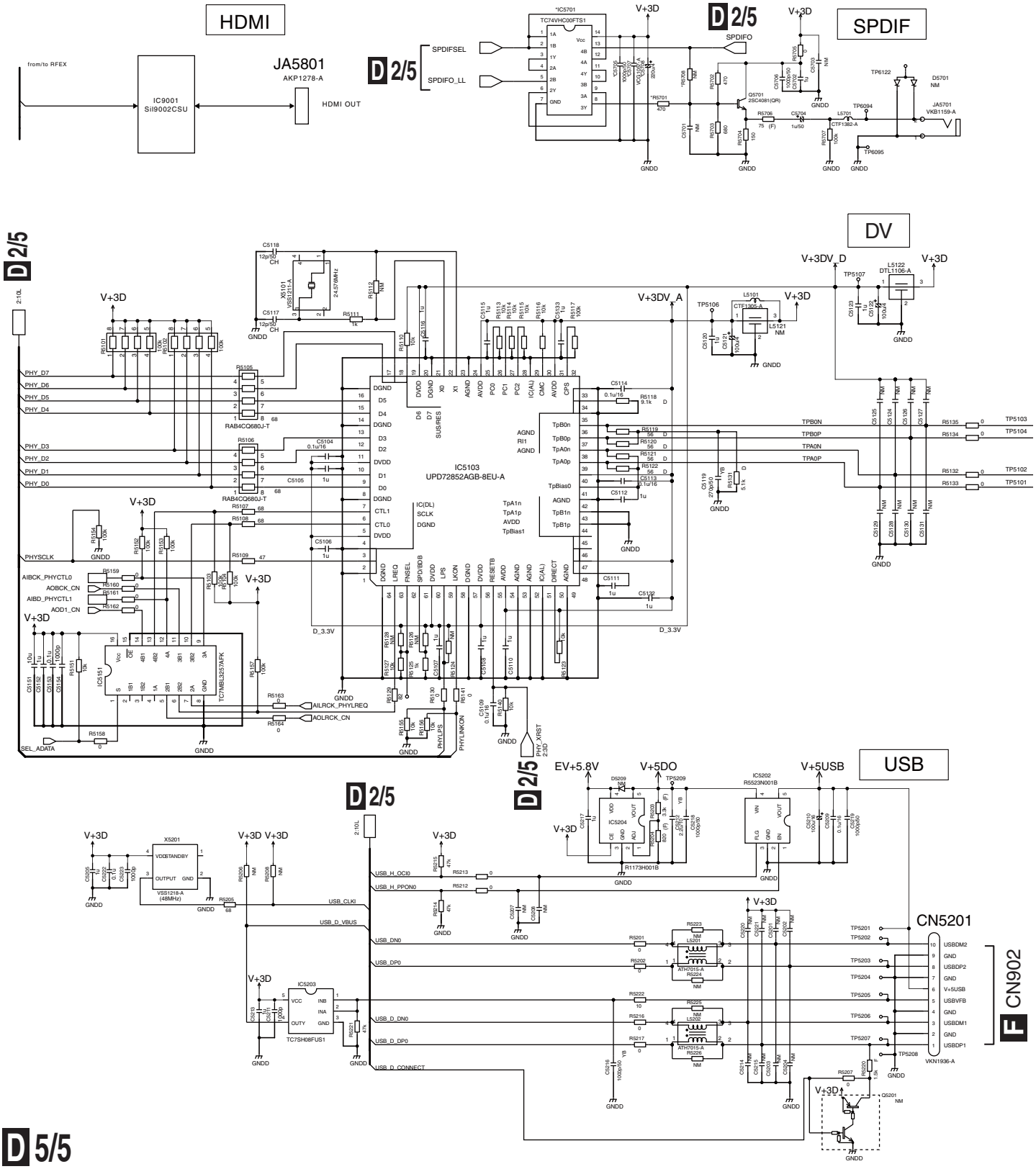
10.8 SERVICE MAIN ASSY (4/5)




Video OUT
V+5_VO
YOUT
Y_OUT
COUT
C_OUT
Y/GOUT
Yp_OUT
Pb/BOUT
Cb_OUT
Pr/ROUT
Cr_OUT
2SA1576A(QR)
Q2501
Q2502
Q2503
Q2504
Q2505
GNDD
2/5
Video IN
Q3301
Q3303
Q3305
Q3307
2SA1576A(QR)-TLB
Y_IN
C/R_IN
G_IN
B_IN
CN2301
VKN2065-A-TBB
from TUJB
1/3 CN101
D 2/5
D 3/5
D 2/5
D 2/5
X525P
YP_OUT
CR_OUT
CB_OUT
Y_OUT
C_OUT
Y_IN
C/R_IN
G_IN
B_IN
LCHOUT
RCHOUT
AMUTE1
RCHIN
LCHIN
P_CONT2
XRST1
SMDOUT
HSMtoT
DAT_TO_M
SMCKOUT
HST_TO_M
TU_DSDA
TU_CEC
TU_DSCL
DDC_SW1
TU_HPD
L_OUT
GNDA
R_OUT
AMUTE1
R_IN
L_IN
MRST
DAM_TO_T
HSM_TO_T
ASCK
DSDA
CEC
DSCL
DDC_SW1
HPD
V+1R5_IN
V+3D
D 4/5
SERVICE MAIN ASSY (4/5)
(VXX3309 : DVR-660H-K)
(VXX3308 : DVR-560H-K,460H-K)
D 4/5

10.9 SERVICE MAIN ASSY (5/5)

D 5/5 SERVICE MAIN ASSY (5/5) (VXX3309 : DVR-660H-K) (VXX3308 : DVR-560H-K,460H-K)



	VWV2341	VWV2343
C4701	NM	NM
C4702	NM	NM
C4703	NM	NM
C4704	NM	NM
C4705	NM	NM
C4706	NM	NM
R4701	NM	NM
R4702	NM	NM
R4703	NM	NM
R4704	NM	NM
R4705	NM	NM
R4706	NM	NM
R4707	NM	NM
R4708	NM	NM
R4709	NM	NM
R4710	NM	NM
R4711	NM	NM
R4712	NM	NM
R4713	NM	NM
R4714	NM	NM
R4715	10k	10k
R4716	10k	10k
R4717	10k	10k
R4718	0	0
R4719	0	0
R4720	0	0
R4721	100	100
R4722	100	100
R4723	47	47
R4724	22	22
R4725	22	22
R4726	22	22
R4727	NM	NM
R4728	10k	10k
R4729	NM	NM
R4730	NM	NM
IC4701	NM	NM
IC4702	NM	NM
IC4703	NM	NM
CN4701	NM	NM

D5701 NM

JA5701 VKB1159-A

V+3D

CN5101 VKN1932-A

F CN901

TPBN TPBP A_GND A_GND TPAN TPAP

D 2/5, 3/5 2:10L,3:14B

D 2/5

RXD2_BRIDGE TXD2_BRIDGE

V+3D V+1R8 V+3DS

IC5602 88SA8040-B1-TBC1

SATA

CN5604 VKN2077-A

GND TXP TXN GND RXN RXP GND

To HDD

	VWV2341	VWV2343
C5705	NM	NM
C5707	NM	NM
C5708	NM	NM
R5701	NM	NM
R5708	390	390
IC5701	NM	NM

CN5201

USBDM2 GND USBDP2 GND V+5USB USBVFB GND USBDM1 GND USBDP1

F CN902

VKN1936-A

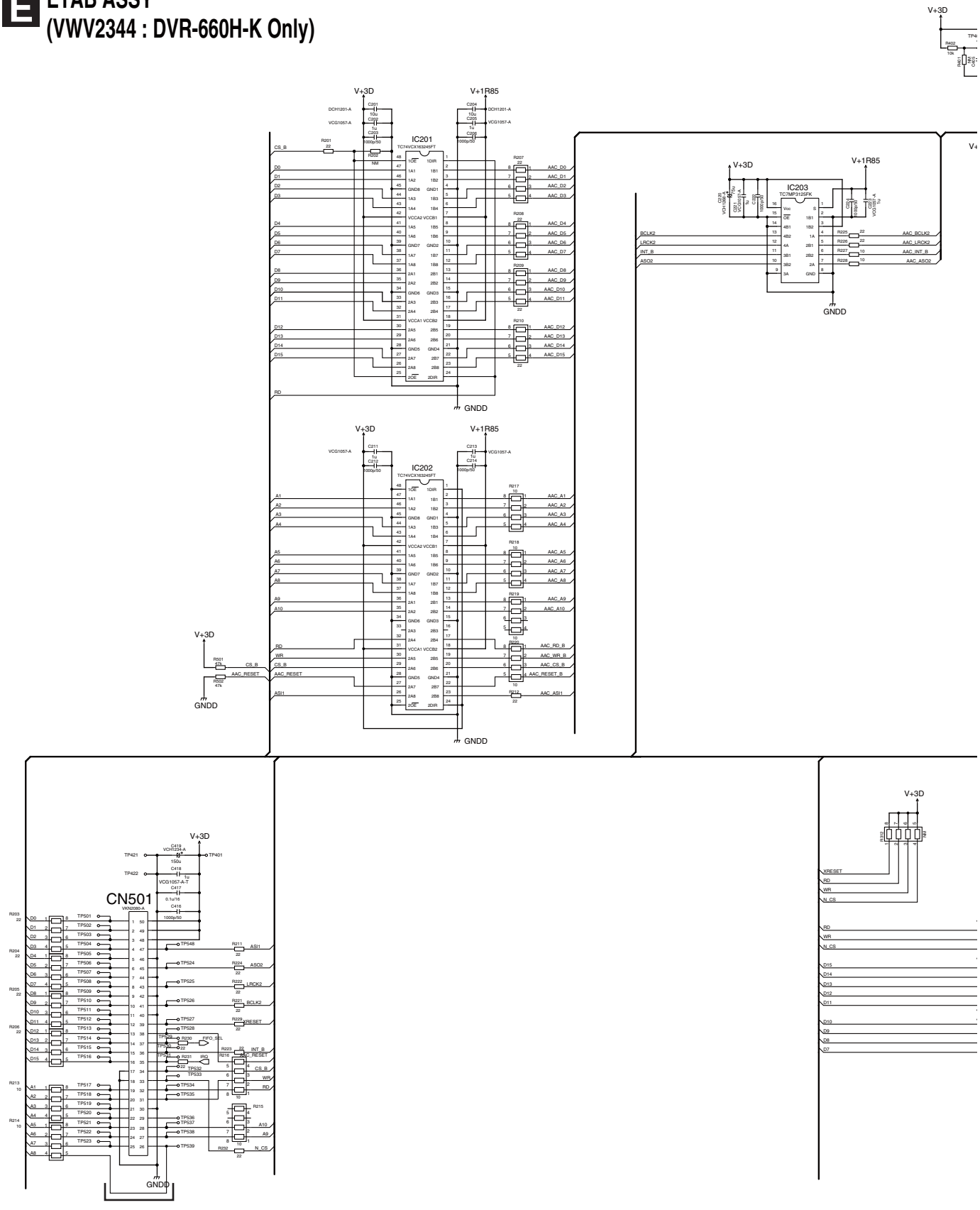
D 1/5,3/5,4/5

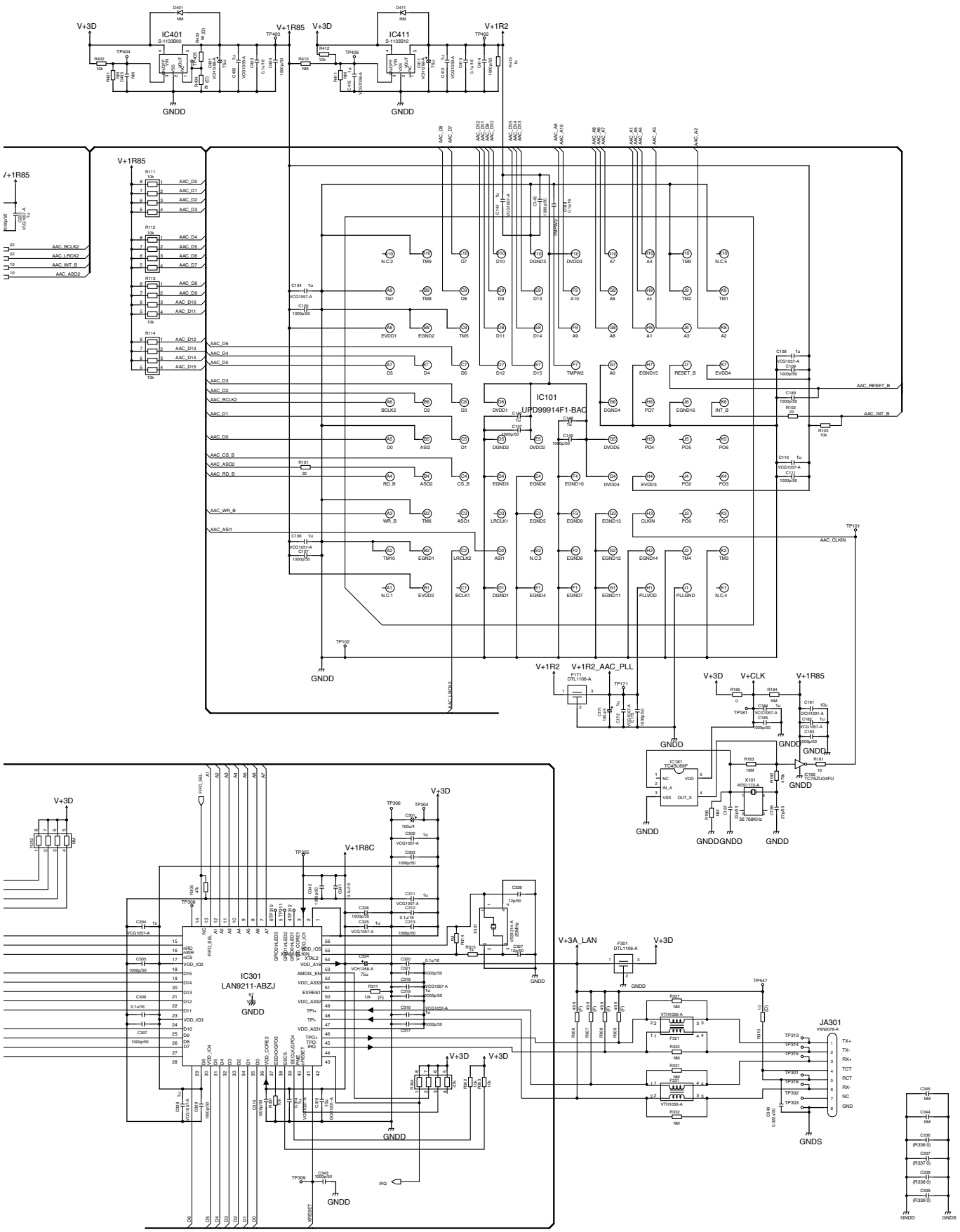
XRESET

D 5/5

10.10 ETAB ASSY (DVR-660H-K ONLY)

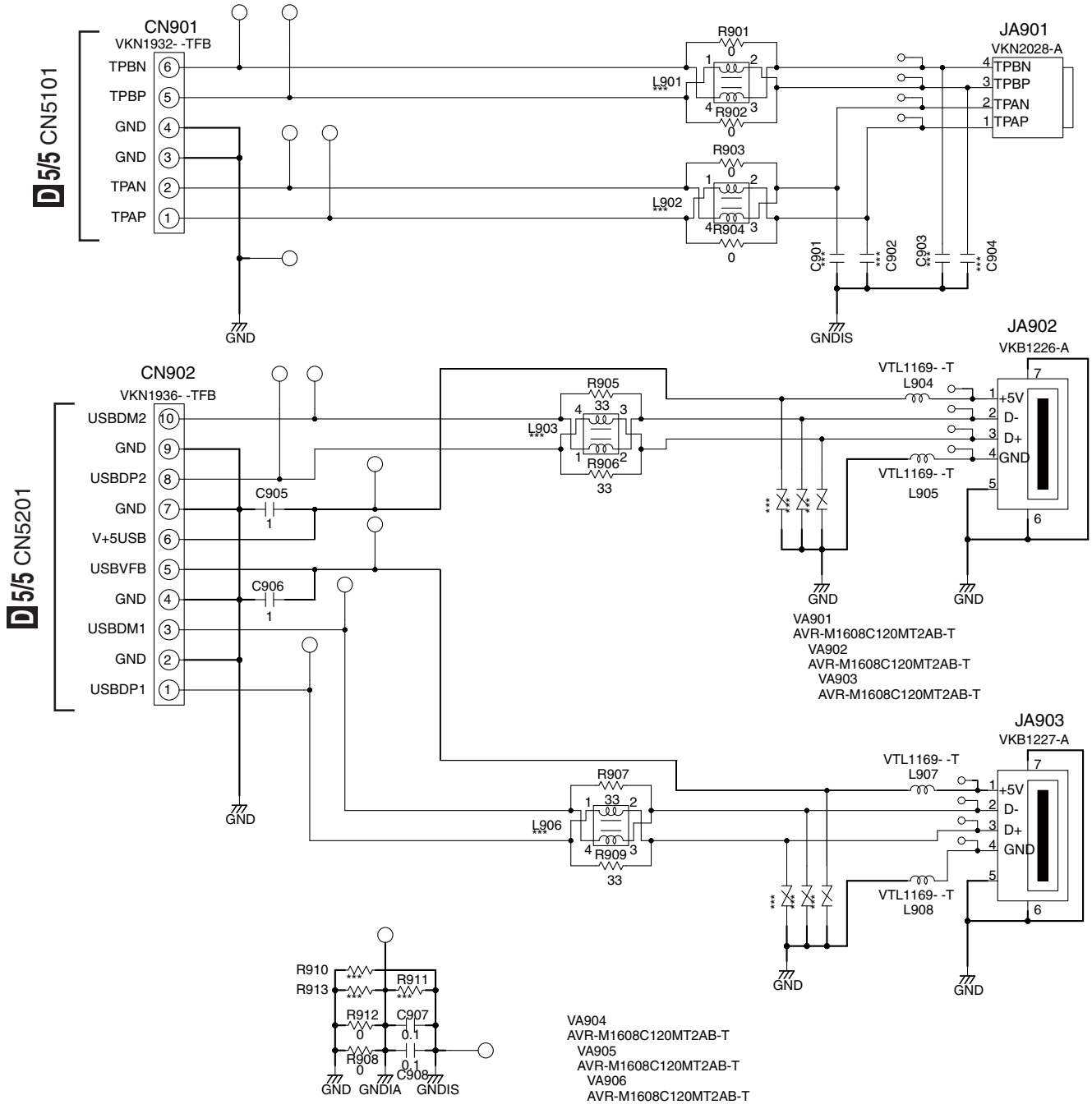
E ETAB ASSY (VWV2344 : DVR-660H-K Only)




IC401
S-1133B00
IC411
S-1133B12
V+3D
V+1R85
V+1R2
GNDD
IC101
UPD99914F1-BAC
AAC_BCLK2
AAC_LRCK2
AAC_INT_B
AAC_ASO2
AAC_RESET_B
AAC_CLKIN
V+1R2_AAC_PLL
V+CLK
IC301
LAN9211-ABZJ
V+1R8C
V+3A_LAN
JA301
GNDS
IRQ
DVR-660H-K
125

10.11 SERVICE DVUB ASSY

F SERVICE DVUB ASSY (YXX1001)



A

B

C

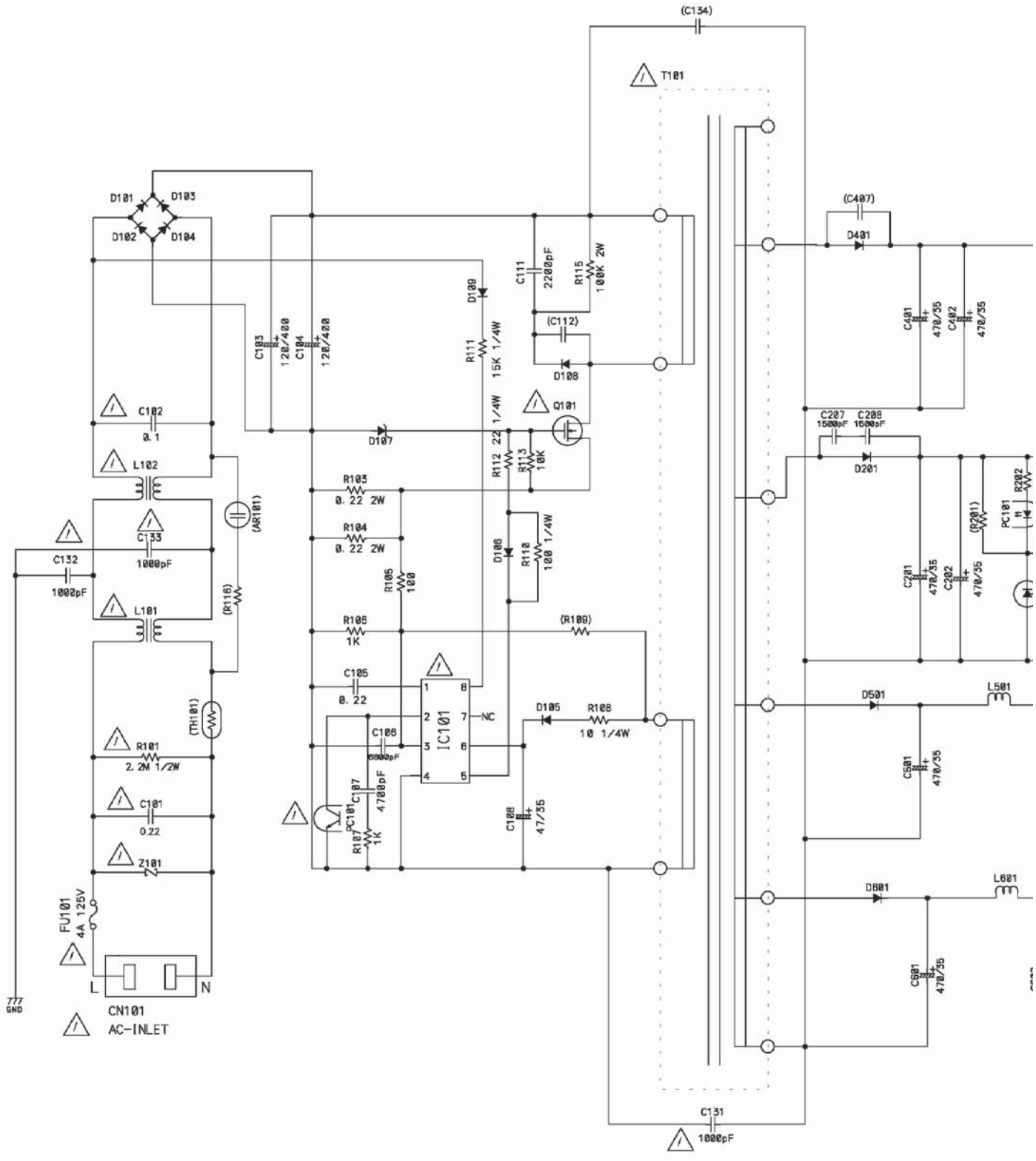
D

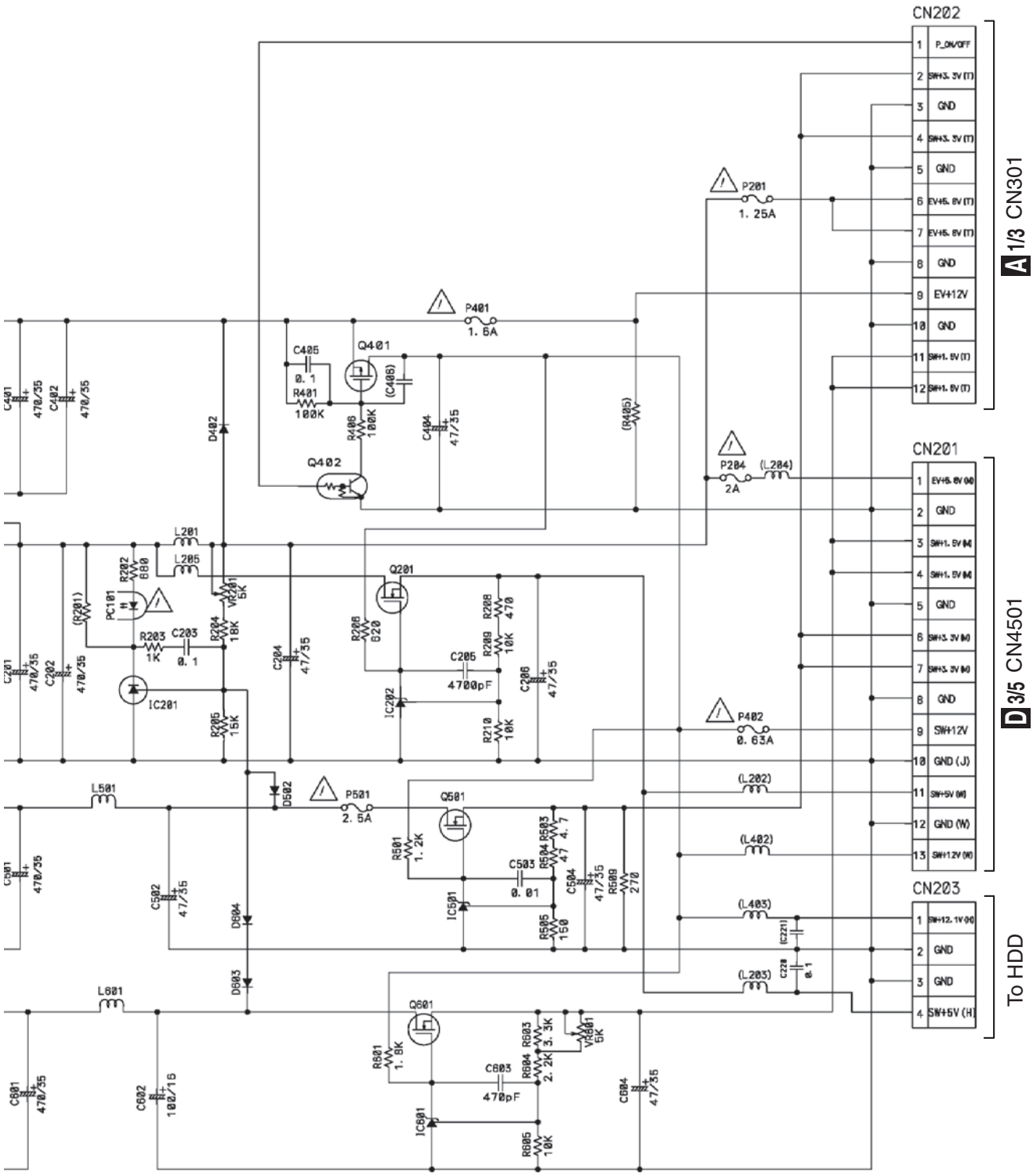
E

F

10.12 POWER SUPPLY ASSY

G POWER SUPPLY ASSY (VWR1408)





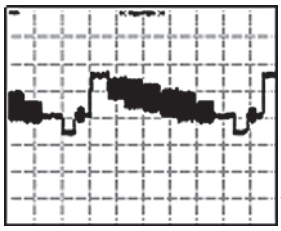
Unit	Resistor	Ω/W (under 1/4W for no direction W)
	Capacitor	μF/V (under 50V for no direction V)

10.13 WAVEFORMS

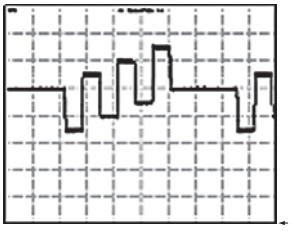
Note : The encircled numbers denote measuring point in the schematic diagram.

A SERVICE TUJB ASSY

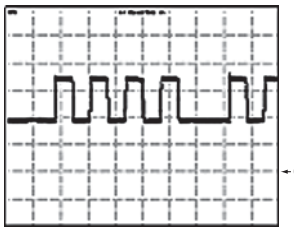
1 **IC401-pin18 (TU-VIN)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



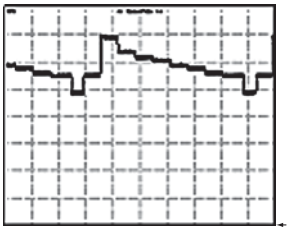
6 **C488+side (CbOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



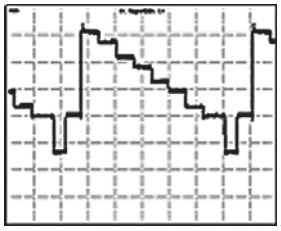
11 **CN101-pin6 (Cb_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



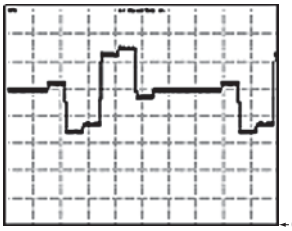
16 **CN101-pin12 (Y_IN TtoM)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



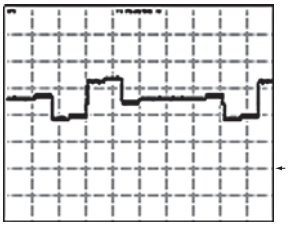
2 **IC401-pin30 (Y1OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



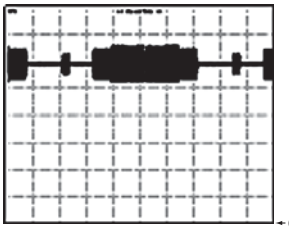
7 **C489+side (CrOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



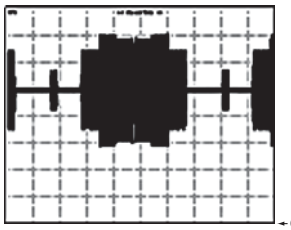
12 **CN101-pin4 (Cr_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



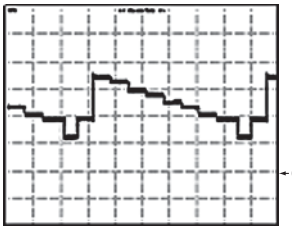
17 **CN101-pin14 (C_IN TtoM)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



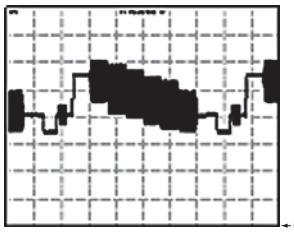
3 **IC401-pin28 (C1OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



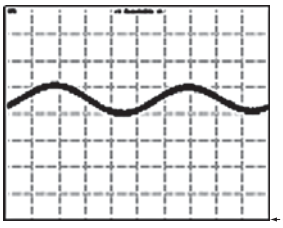
8 **CN101-pin8 (Y_OUT MtoT)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



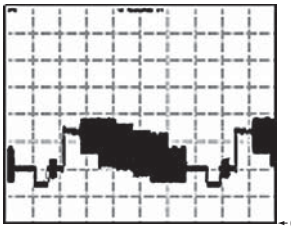
13 **IC401-pin14 (2VIN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



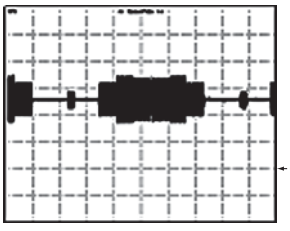
18 **IC401-pin87 (TU-LIN)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



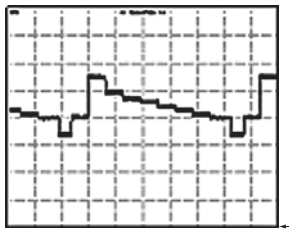
4 **C490+side (V2OUT)**
(Function : DVD play)
V:1V/div. H:10μsec/div.



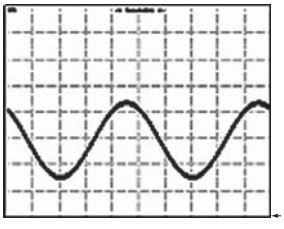
9 **CN101-pin10 (C_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



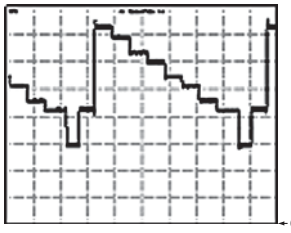
14 **IC401-pin7 (Y2IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



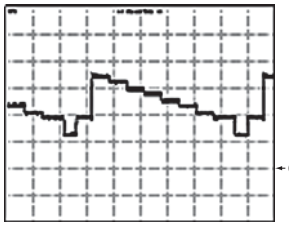
19 **C491+side (L_OUT)**
Function : DVD play)
V:500mV/div. H:10μsec/div.



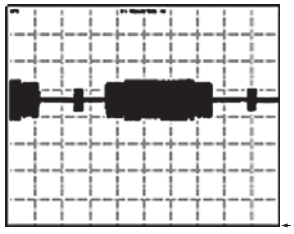
5 **C487+side (YOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



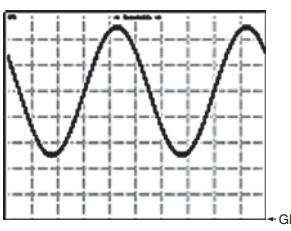
10 **CN101-pin2 (Yp_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



15 **IC401-pin9 (C2IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



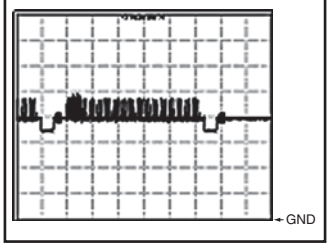
20 **CN101-pin26 (L_IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



A SERVICE TUJB ASSY

Measurement Condition :

21 **IC101-pin81 (TEXTV)**
(Function : RF IN)
V:1V/div. H:10μsec/div.

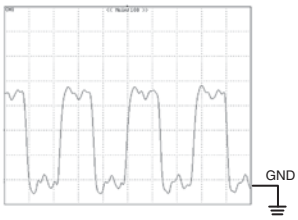


D SERVICE MAIN ASSY

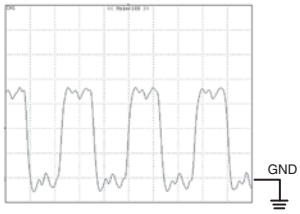
Measurement Condition :

No.1 - 8 : EBU Color Bar (100 / 0 / 75 / 0)

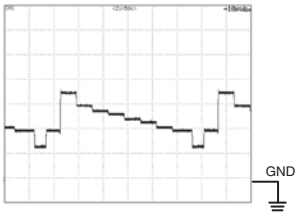
1 **IC3201 Pin16 (DACMCK)**
V: 1V/div. H: 20ns/div.



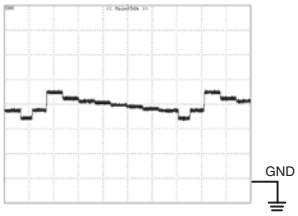
6 **IC3101 Pin11 (ADCCLK0)**
V: 1V/div. H: 20ns/div.



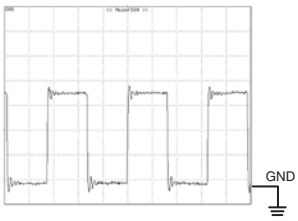
11 **CN2301 Pin39 (YP)**
V: 0.5V/div. H: 10us/div.



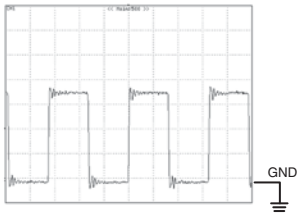
16 **CN2301 Pin29 (S_Y)**
V: 1V/div. H: 10us/div.



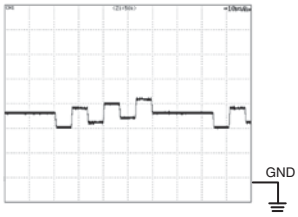
2 **IC3201 Pin1 (DACBCK)**
V: 1V/div. H: 100ns/div.



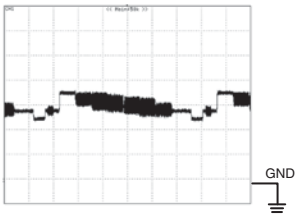
7 **IC3101 Pin12 (AD_BCK)**
V: 1V/div. H: 100ns/div.



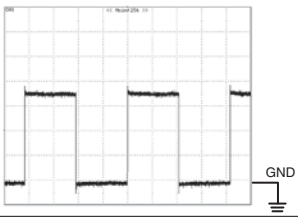
12 **CN2301 Pin35 (CB)**
V: 0.5V/div. H: 10us/div.



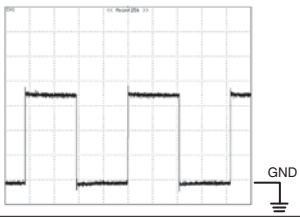
16 **CN2301 Pin29 (CVBS)**
V: 1V/div. H: 10us/div.



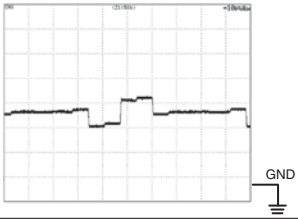
3 **IC3201 Pin3 (DACLRCK)**
V: 1V/div. H: 5us/div.



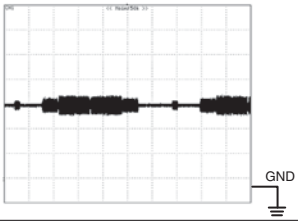
8 **IC3101 Pin10 (AD_LRCK)**
V: 1V/div. H: 5us/div.



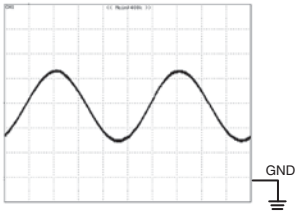
13 **CN2301 Pin37 (CR)**
V: 0.5V/div. H: 10us/div.



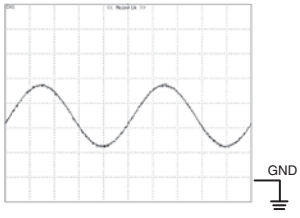
17 **CN2301 Pin27 (S_C)**
V: 1V/div. H: 10us/div.



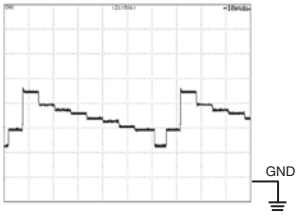
4 **CN2301 Pin21 (LCHOUT)**
V: 2V/div. H: 200us/div.



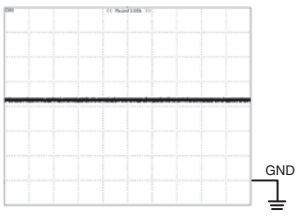
9 **CN2301 Pin15 (LCHIN)**
V: 1V/div. H: 200us/div.



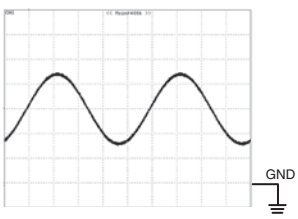
14 **CN2301 Pin33 (Y)**
V: 0.5V/div. H: 10us/div.



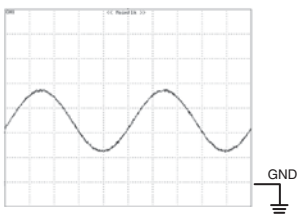
18 **IC501 Pin34 (XDMUTE1)**
V: 1V/div. H: 20us/div.



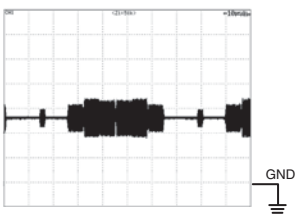
5 **CN2301 Pin19 (RCHOUT)**
V: 2V/div. H: 200us/div.



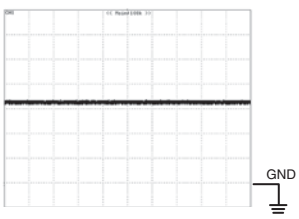
10 **CN2301 Pin17 (RCHIN)**
V: 1V/div. H: 200us/div.



15 **CN2301 Pin31 (C)**
V: 0.5V/div. H: 10us/div.

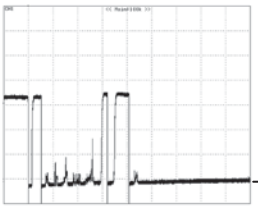


19 **IC501 Pin35 (XDMUTE2)**
V: 1V/div. H: 20us/div.

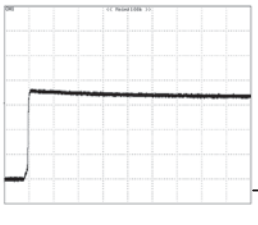


D SERVICE MAIN ASSY

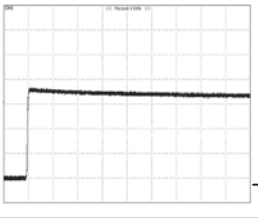
20 **CN601 Pin3 (CLOSE)**
open → close
V: 1V/div. H: 20us/div.



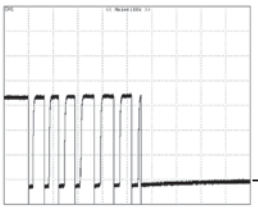
20 **CN601 Pin3 (CLOSE)**
close → open
V: 1V/div. H: 20us/div.



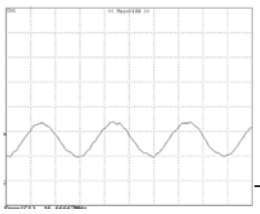
21 **CN601 Pin5 (OPEN)**
open → close
V: 1V/div. H: 20us/div.



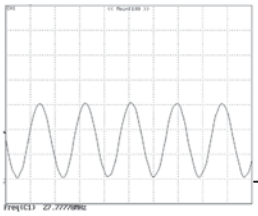
21 **CN601 Pin5 (OPEN)**
close → open
V: 1V/div. H: 20us/div.



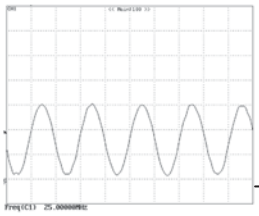
22 **X101 (16.66667 MHz)**
V: 1V/div. H: 20ns/div.



23 **X1002 (27.77778 MHz)**
V: 1V/div. H: 20ns/div.



24 **X1001 (25 MHz)**
V: 1V/div. H: 20ns/div.



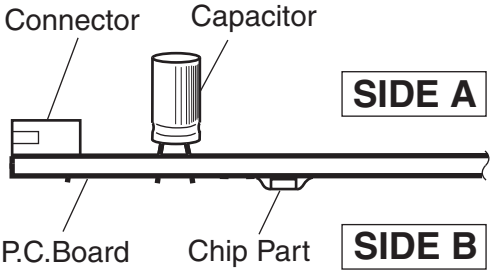
11. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS :

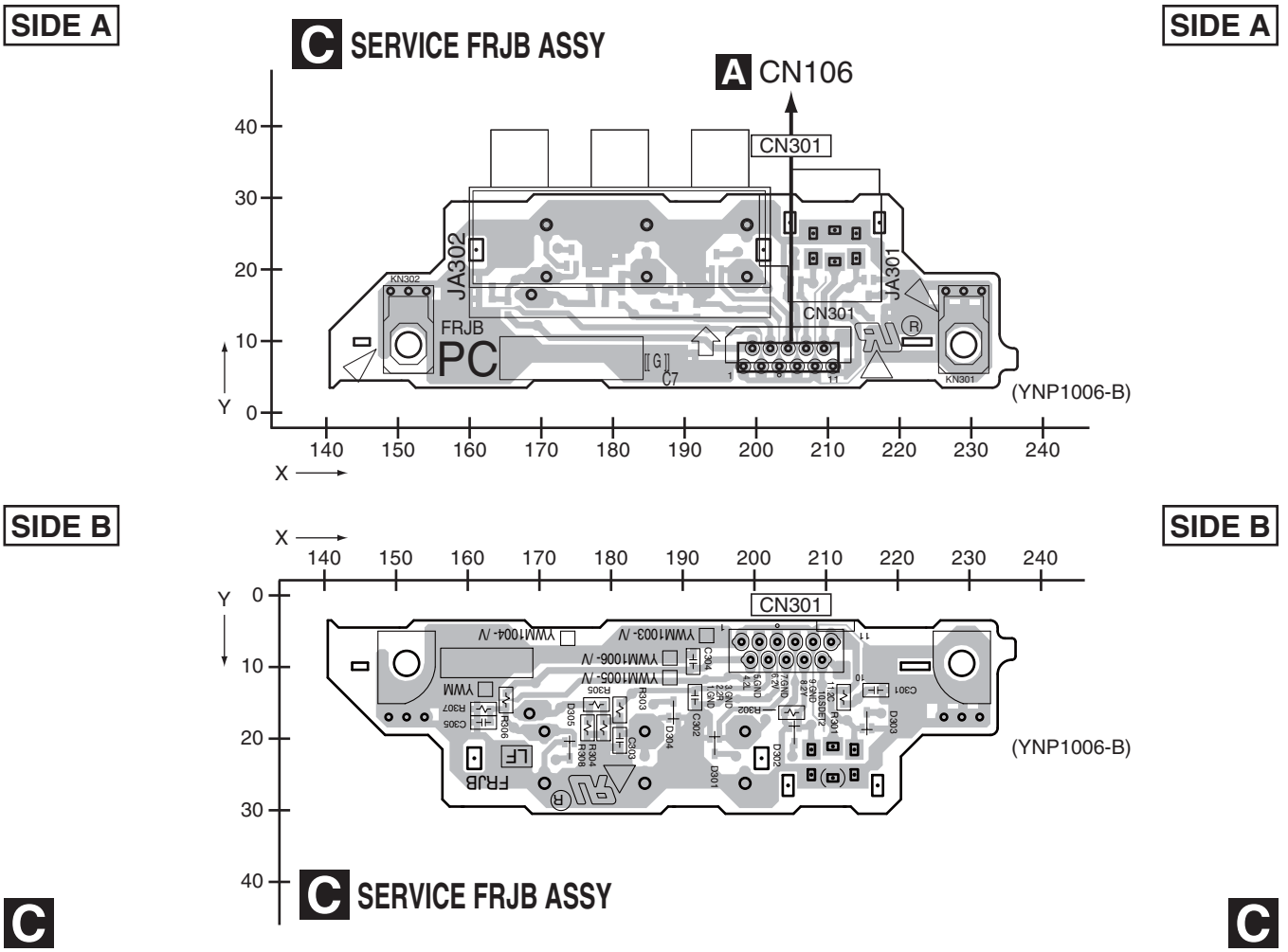
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.

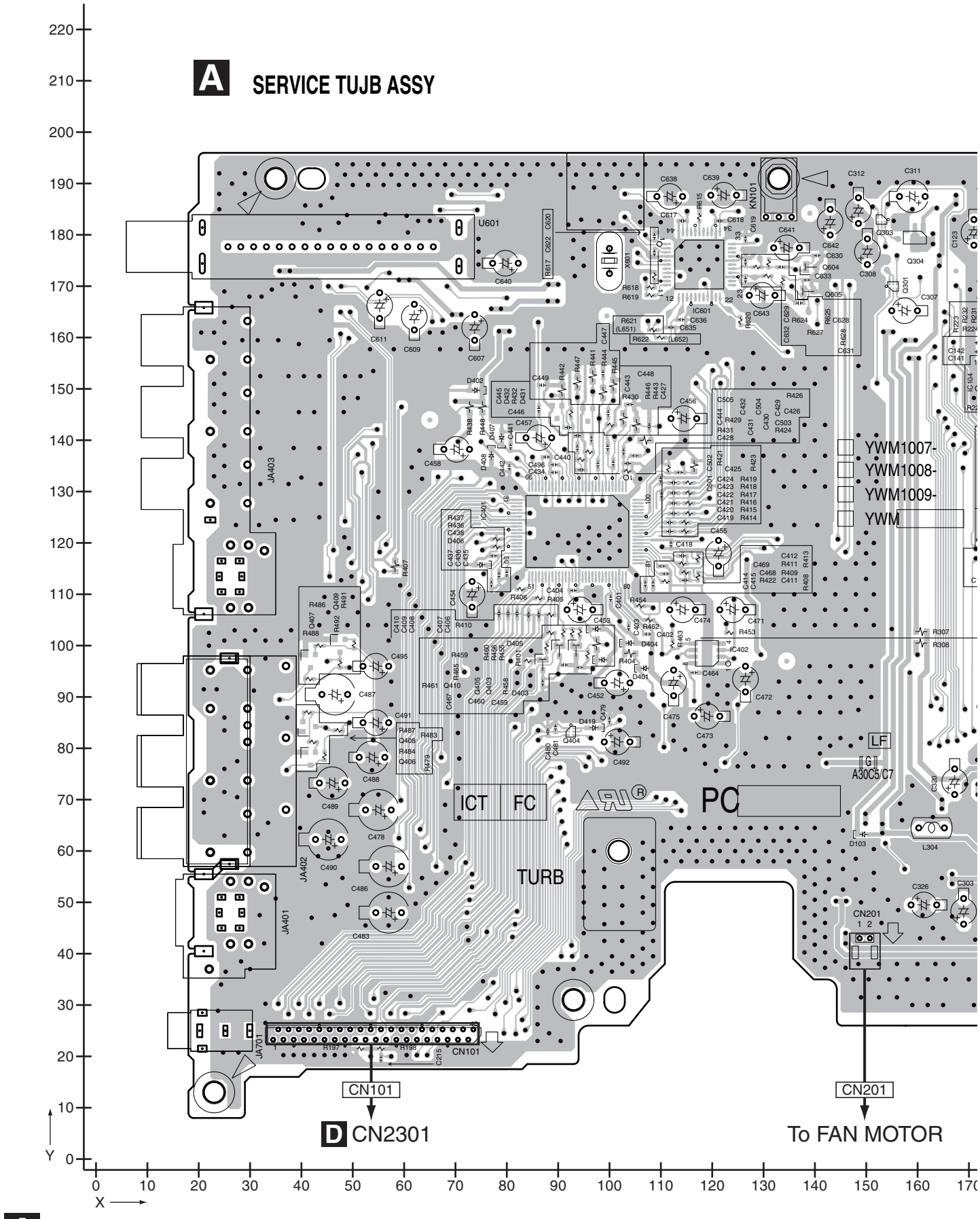


11.1 SERVICE FRJB ASSY

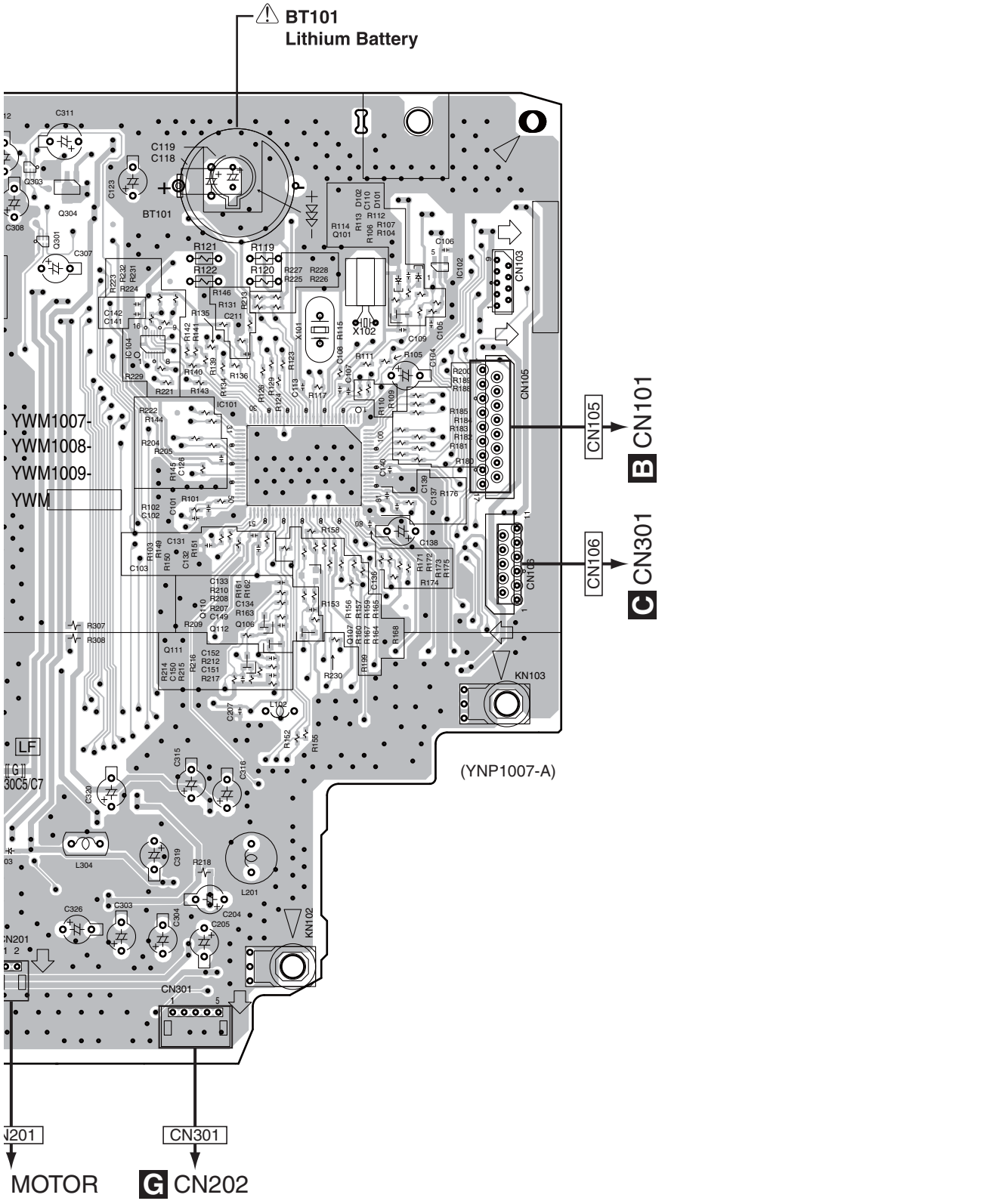


11.2 SERVICE TUJB ASSY

SIDE A

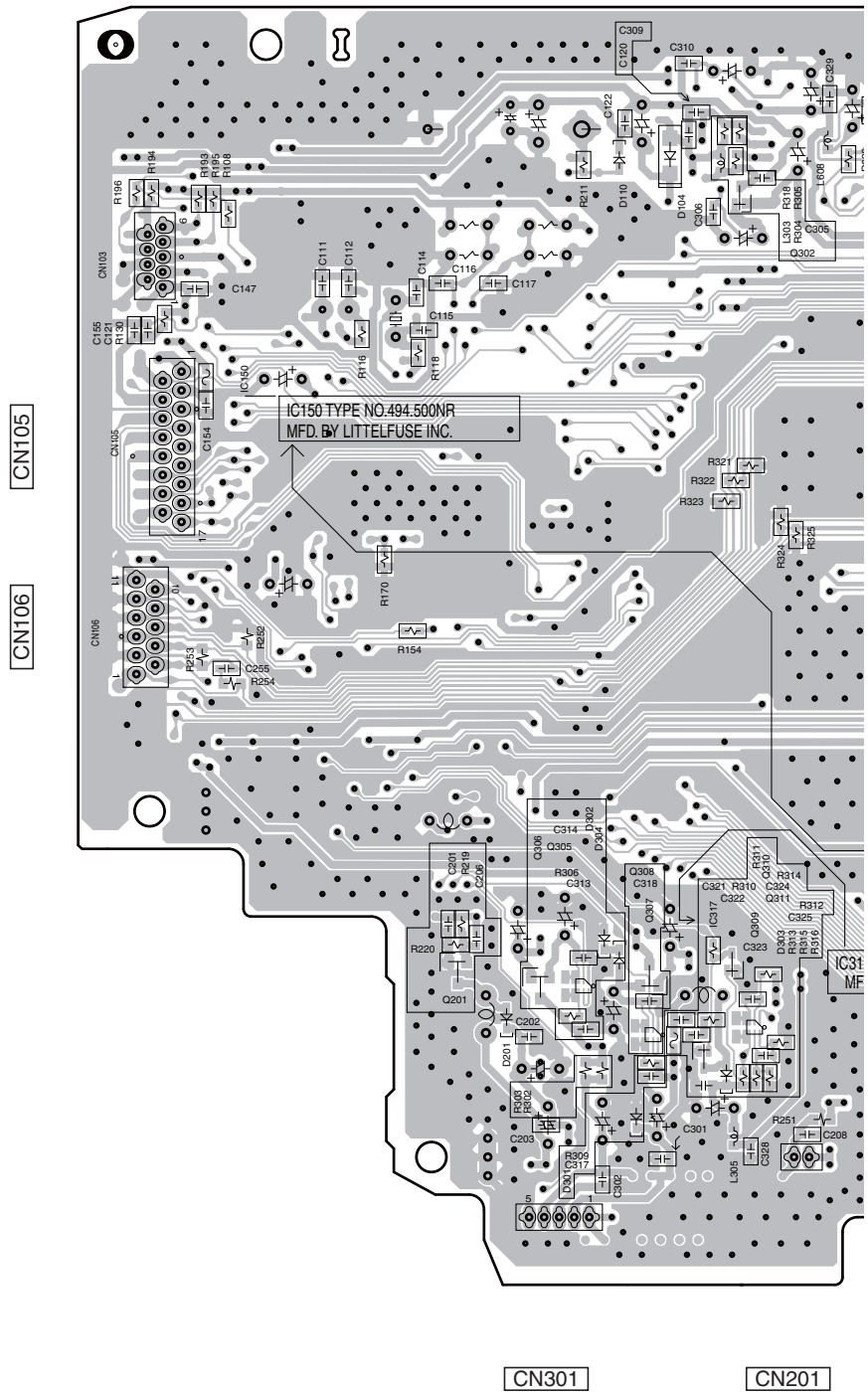


SIDE A

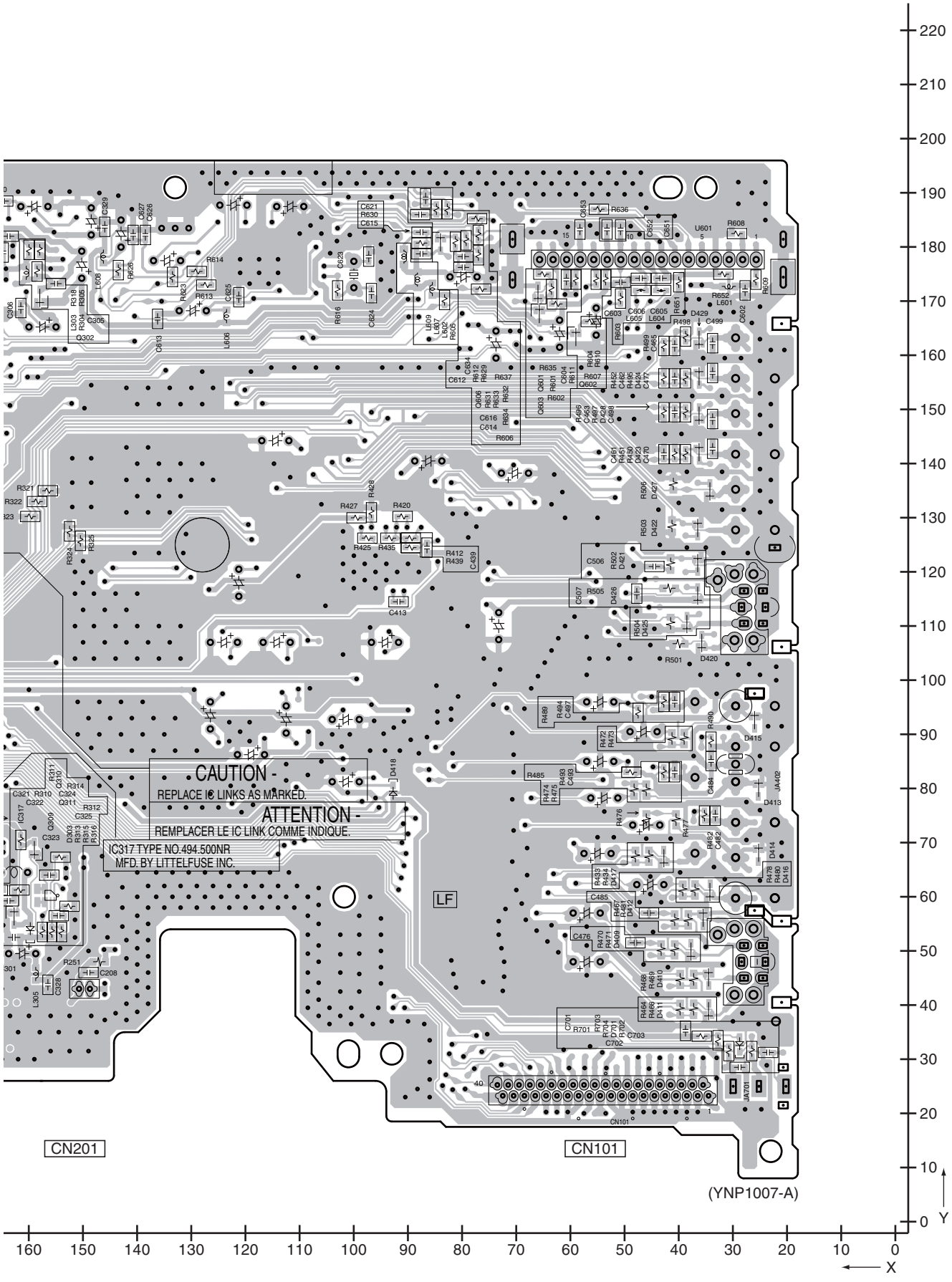

BT101
Lithium Battery
YWM1007-
YWM1008-
YWM1009-
YWM
(YNP1007-A)
CN105
B CN101
CN106
C CN301
KN103
KN102
CN301
MOTOR
G CN202
150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320

SIDE B

A SERVICE TUJB ASSY

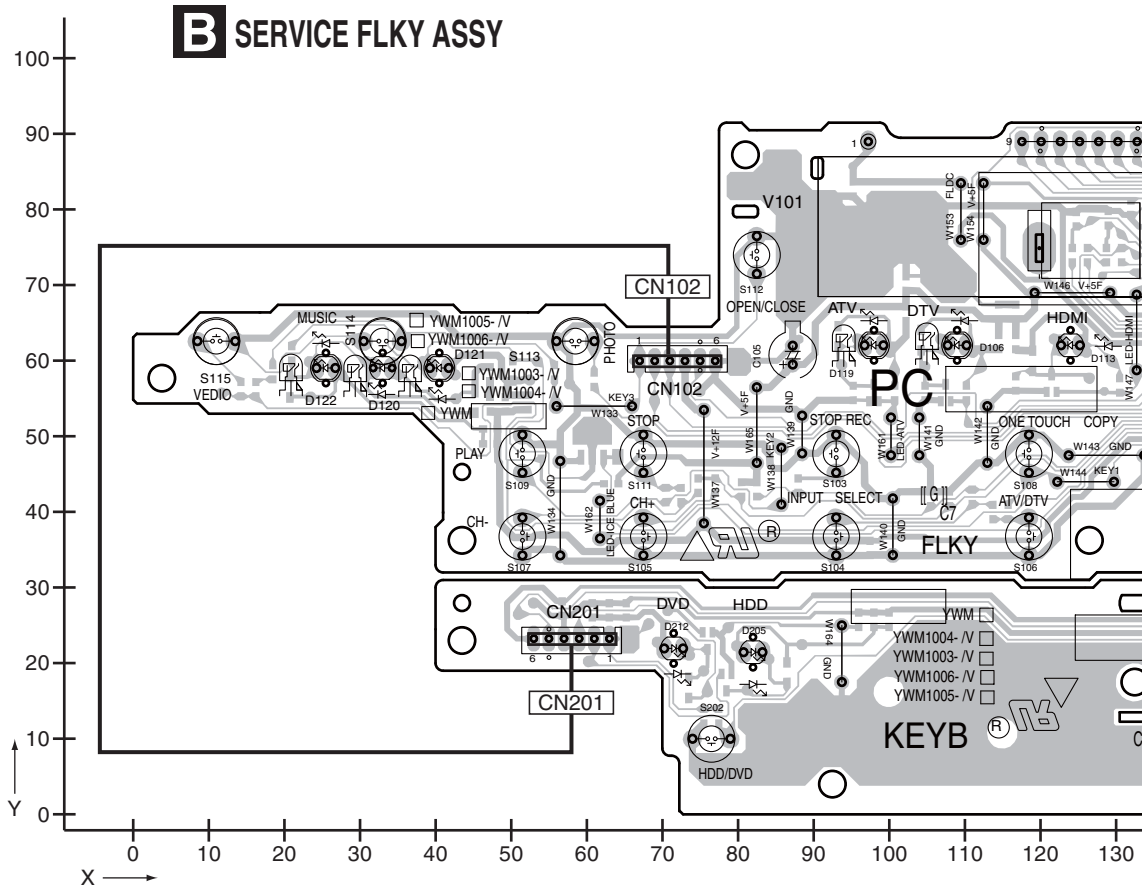


SIDE B

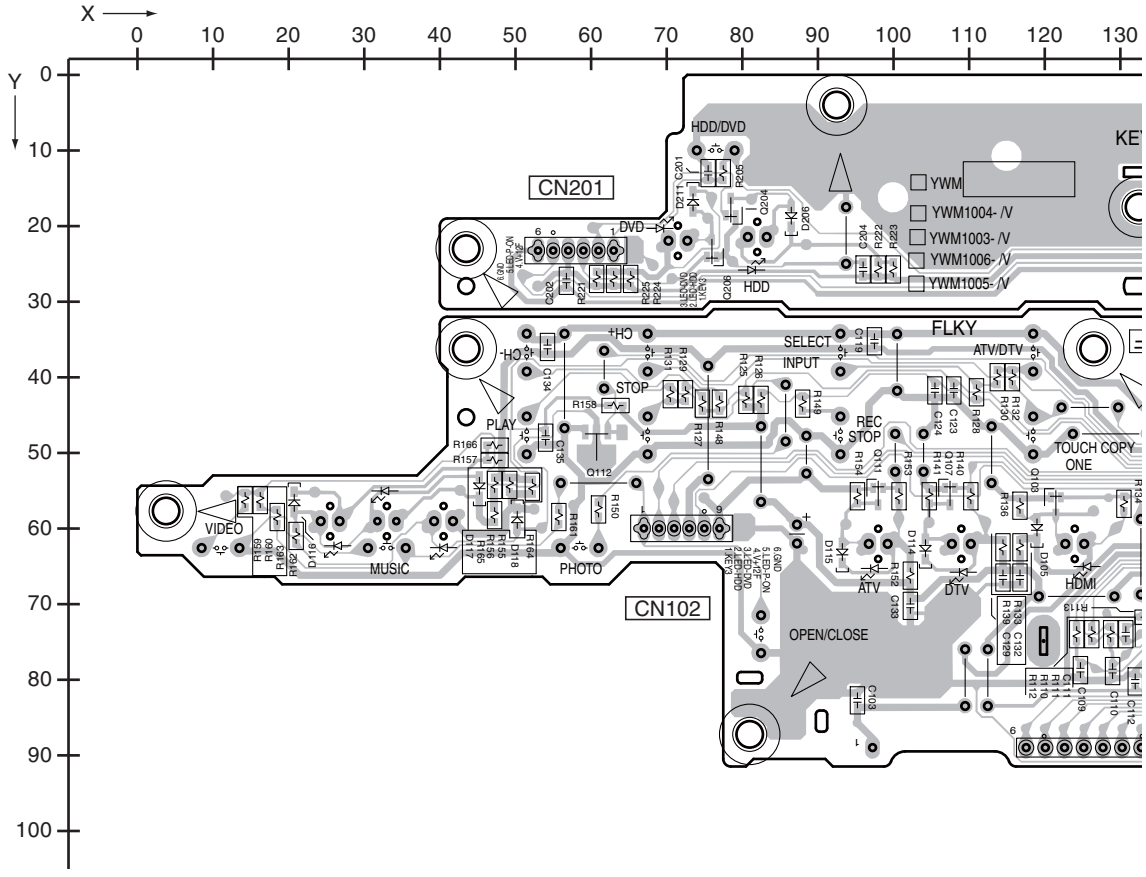

CAUTION -
REPLACE IC LINKS AS MARKED.
ATTENTION -
REMPLACER LE IC LINK COMME INDIQUE.
IC317 TYPE NO.494.500NR
MFD. BY LITTELFUSE INC.
LF
CN201
CN101
(YNP1007-A)
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 Y
160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 X

11.3 SERVICE FLKY ASSY

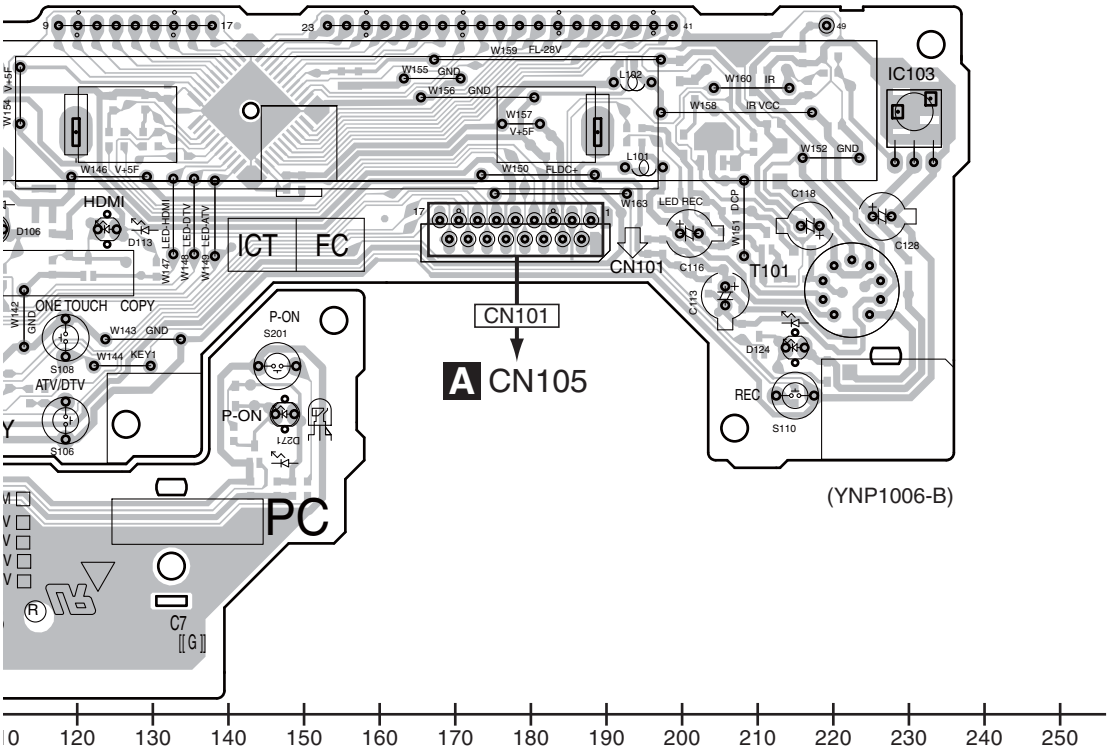
SIDE A

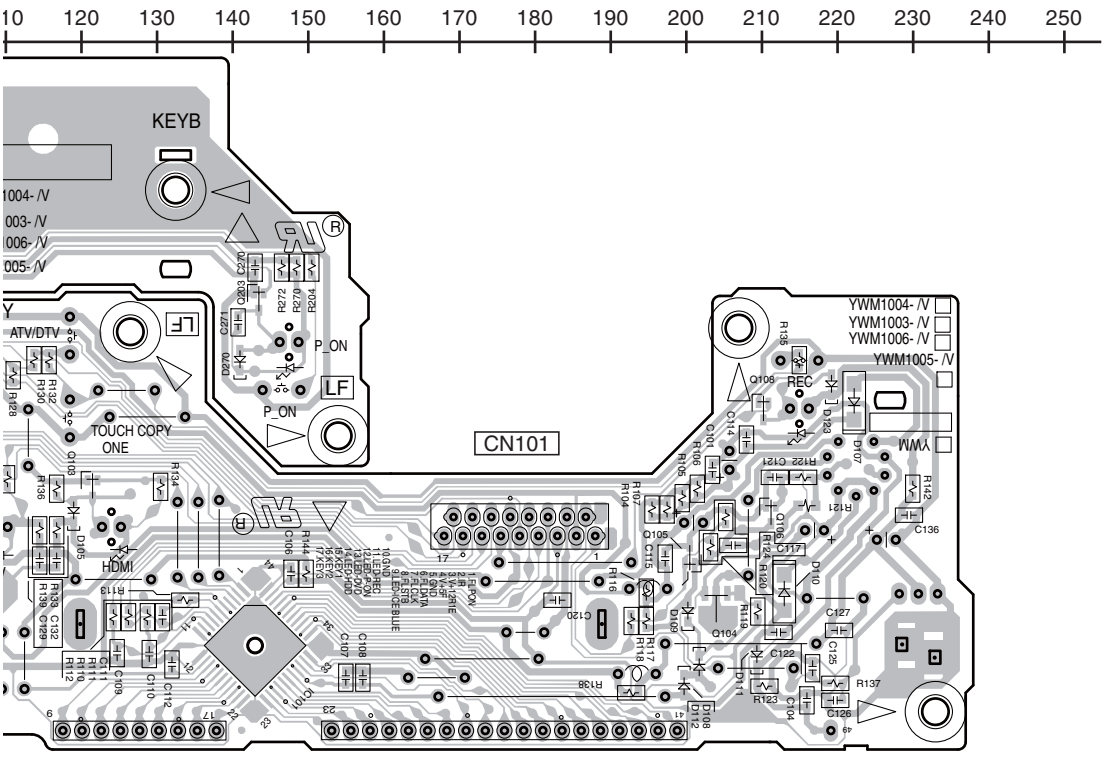


SIDE B



SIDE A


W159 FL-28V
W155 GND
W156 GND
W157 V+5F
W146 V+5F
W150 FLDC+
W160 IR
W158 IR VCC
W152 GND
IC103
L102
L101
HDMI
D106
D113
LED-HDMI
LED-DTV
LED-ATV
ICT
FC
CN101
W163
LED REC
W161 DCP
C118
C128
C116
C117
T101
D124
REC
S110
ONE TOUCH COPY
W142 GND
W143 GND
W144 KEY1
S108
ATV/DTV
S106
P-ON
S201
P-ON
D271
CN101
A CN105
PC
C7
[G]
(YNP1006-B)


KEYB
YWM1004- /V
YWM1003- /V
YWM1006- /V
YWM1005- /V
ATV/DTV
P_ON
LF
P_ON
TOUCH COPY
ONE
CN101
HDMI
REC
(YNP1006-B)

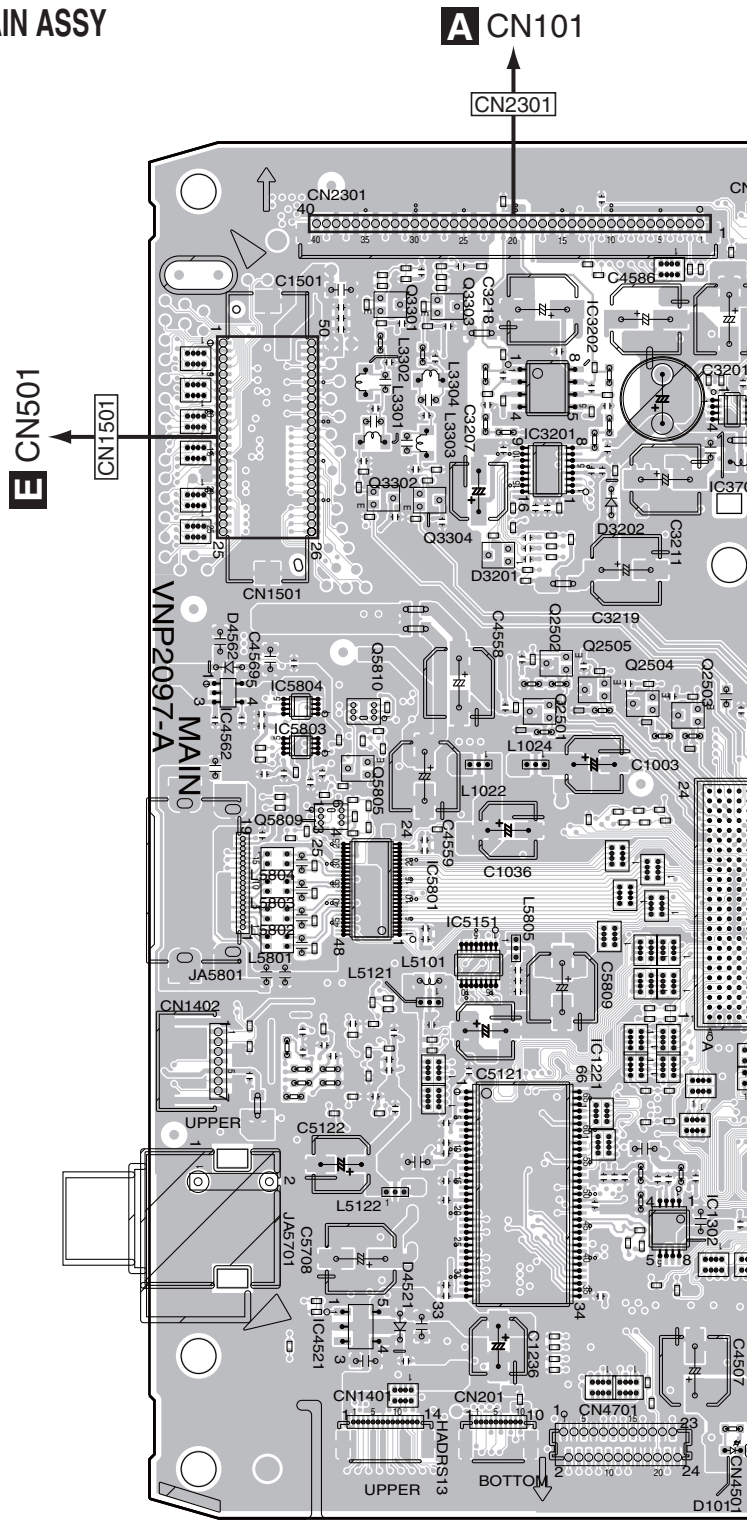
SIDE B

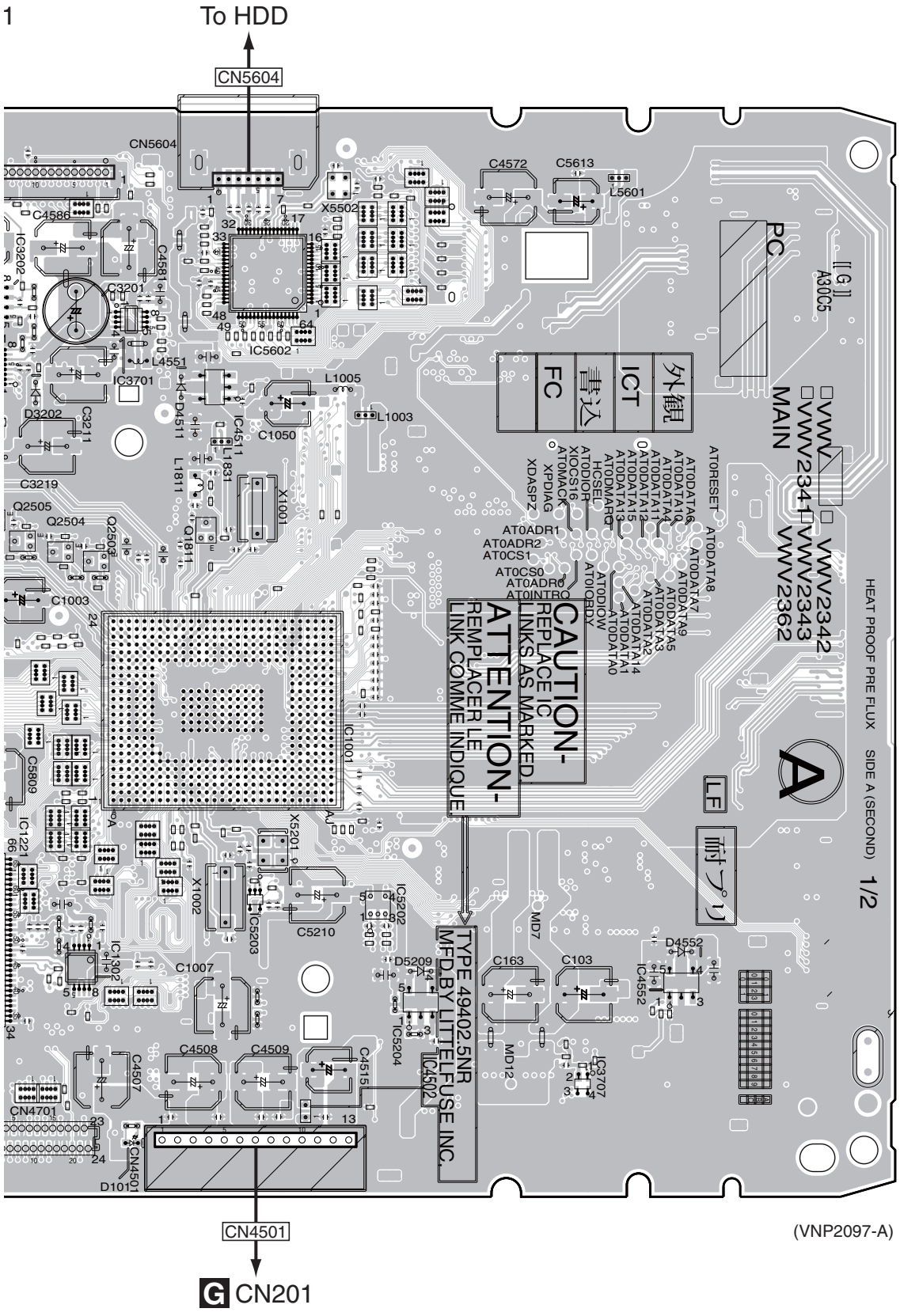
11.4 SERVICE MAIN ASSY

SIDE A

D SERVICE MAIN ASSY

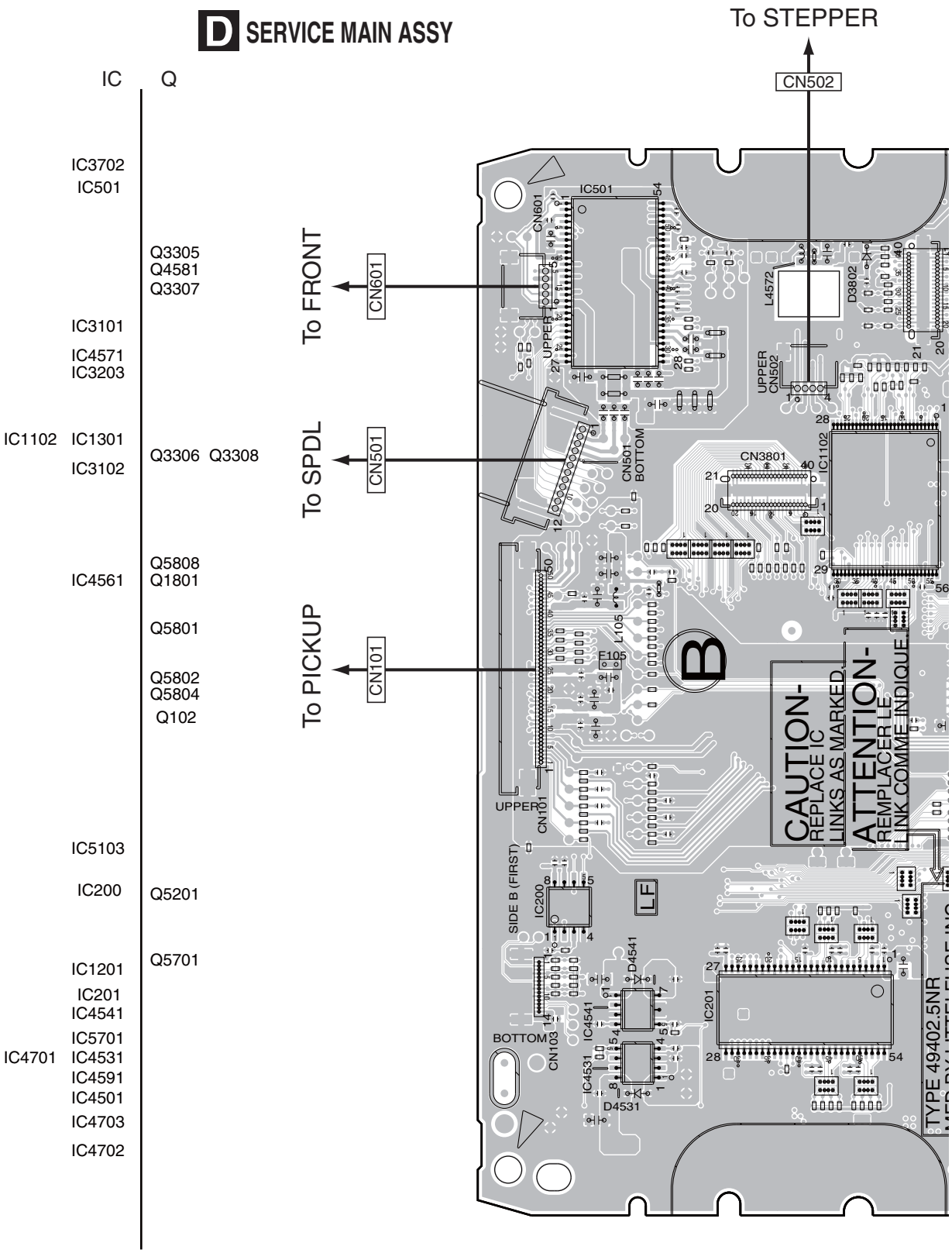
IC		Q	
		Q3301	Q3303
	IC3202		
IC3201	IC5602		
	IC3701	Q3302	
		Q3304	
	IC4511		
		Q2502	
		Q2505	
		Q2504	Q5810
	IC5804	Q1811	Q2503
		Q2501	
IC4562	IC5803		
		Q5805	
		Q5809	
	IC5801		
	IC5151		
	IC1001		
	IC1221		
IC5202			
	IC5203		
	IC1302		
	IC4552		
	IC5204		
	IC4521		
IC3707	IC4502		




To HDD
CN5604
CN4501
G CN201
VWV2342 VWV2343 VWV2362
MAIN
PC
外観
ICT
書込
FC
HEAT PROOF PRE FLUX
SIDE A (SECOND)
1/2
CAUTION-
REPLACE IC
LINKS AS MARKED.
ATTENTION-
REMPLACER LE
LINK COMME INDIQUE.
TYPE 49402.5NR
MFD.BY LITTELFUSE INC.
(VNP2097-A)

SIDE B

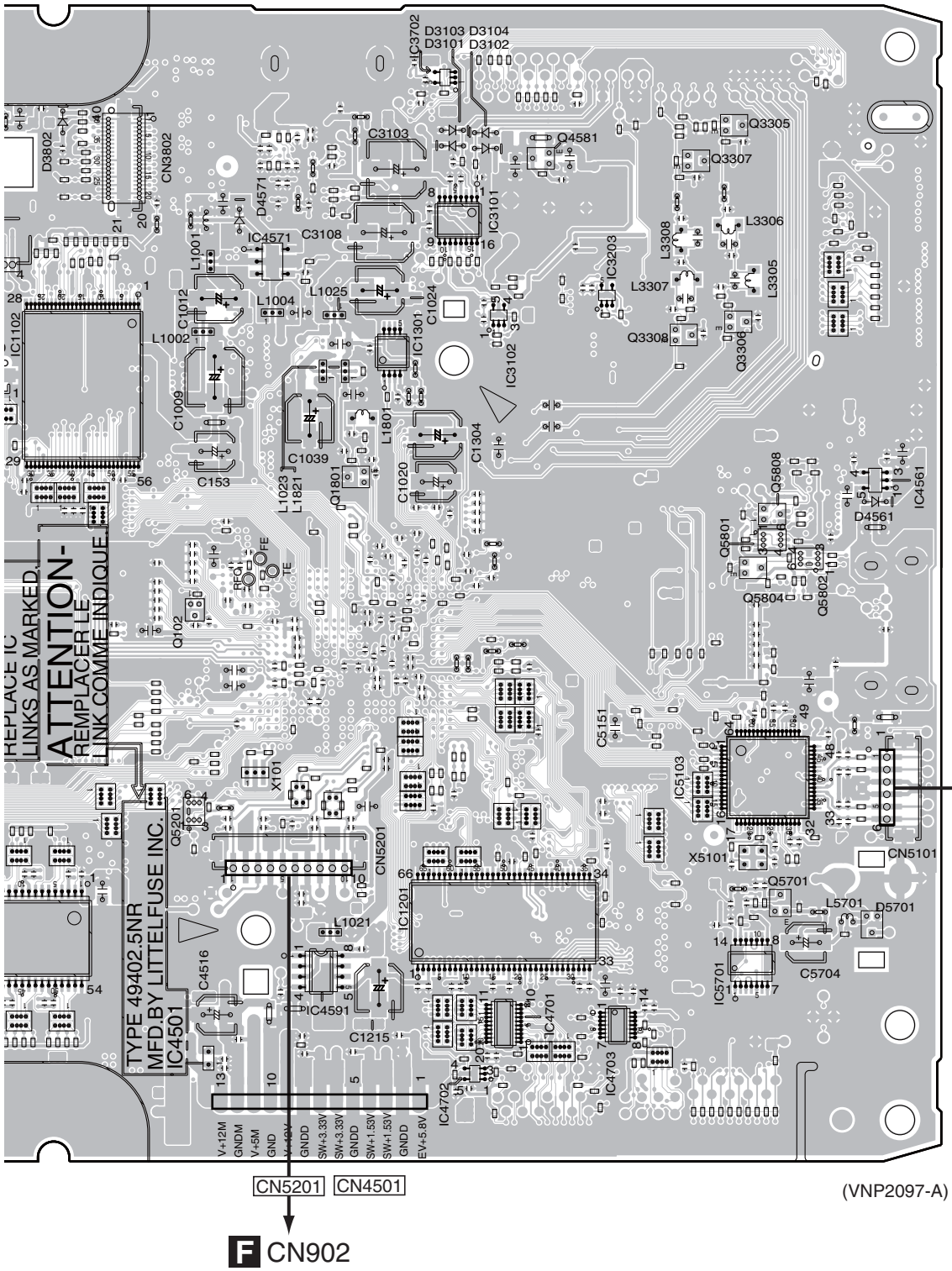
D SERVICE MAIN ASSY



SIDE B

PPER

502



11.5 ETAB ASSY (DVR-660H-K ONLY)

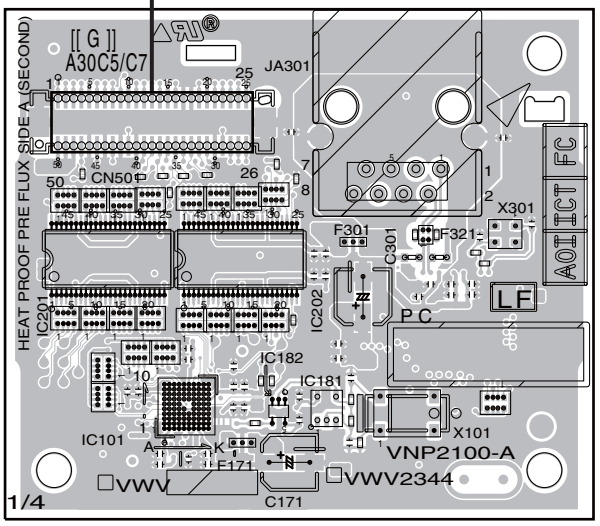
SIDE A **SIDE A**

E ETAB ASSY

D CN1501

IC Q

IC201 IC202
IC182
IC181
IC101



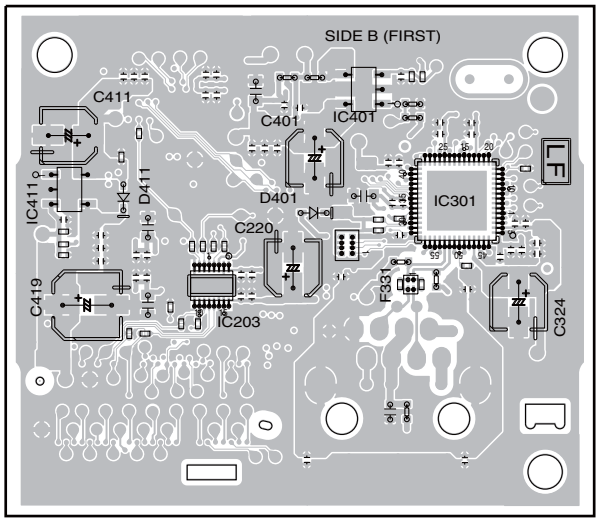
(VNP2100-A)

SIDE B **SIDE B**

E ETAB ASSY

IC Q

IC401
IC411
IC301

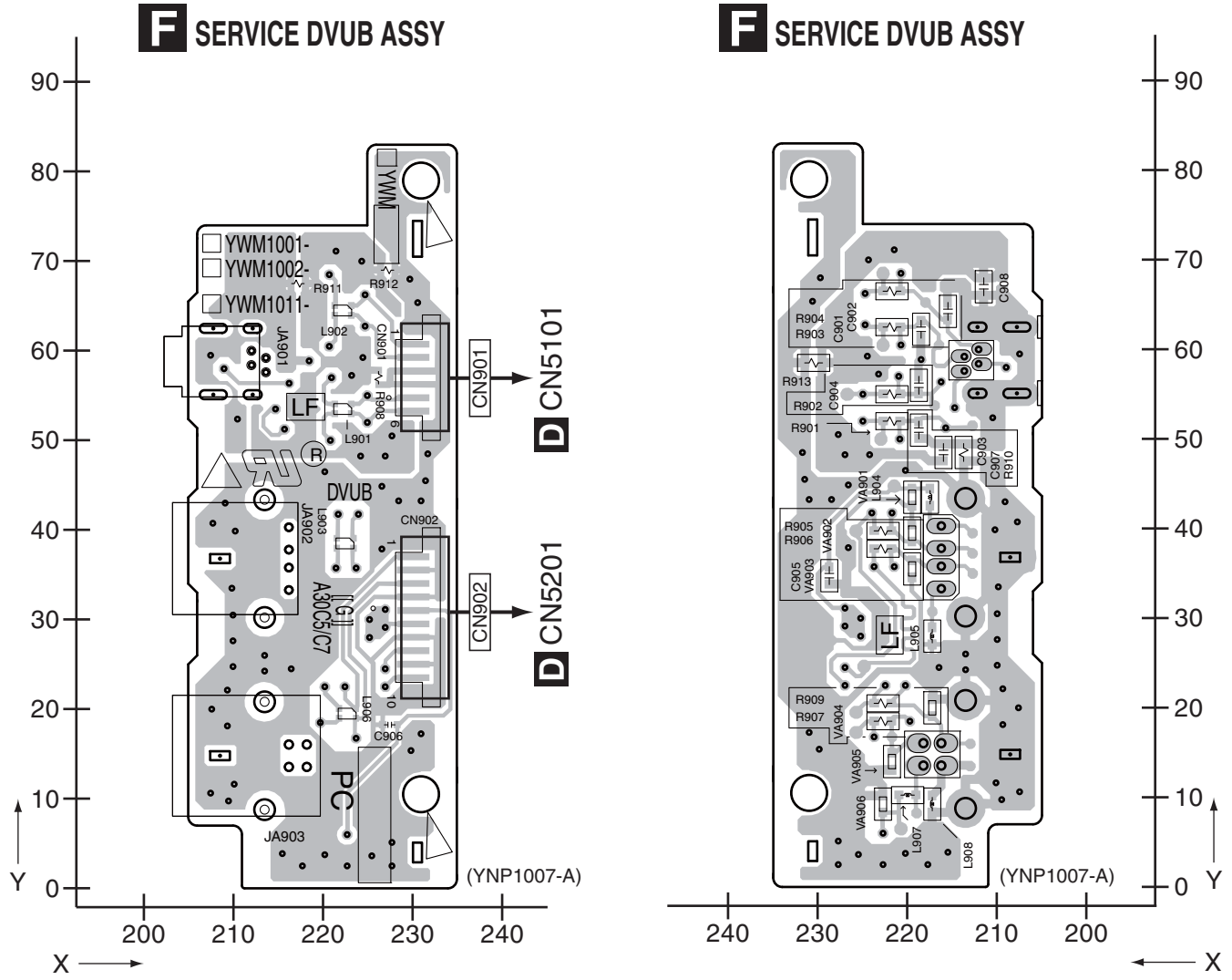


(VNP2100-A)

11.6 SERVICE DVUB ASSY

SIDE A

SIDE B

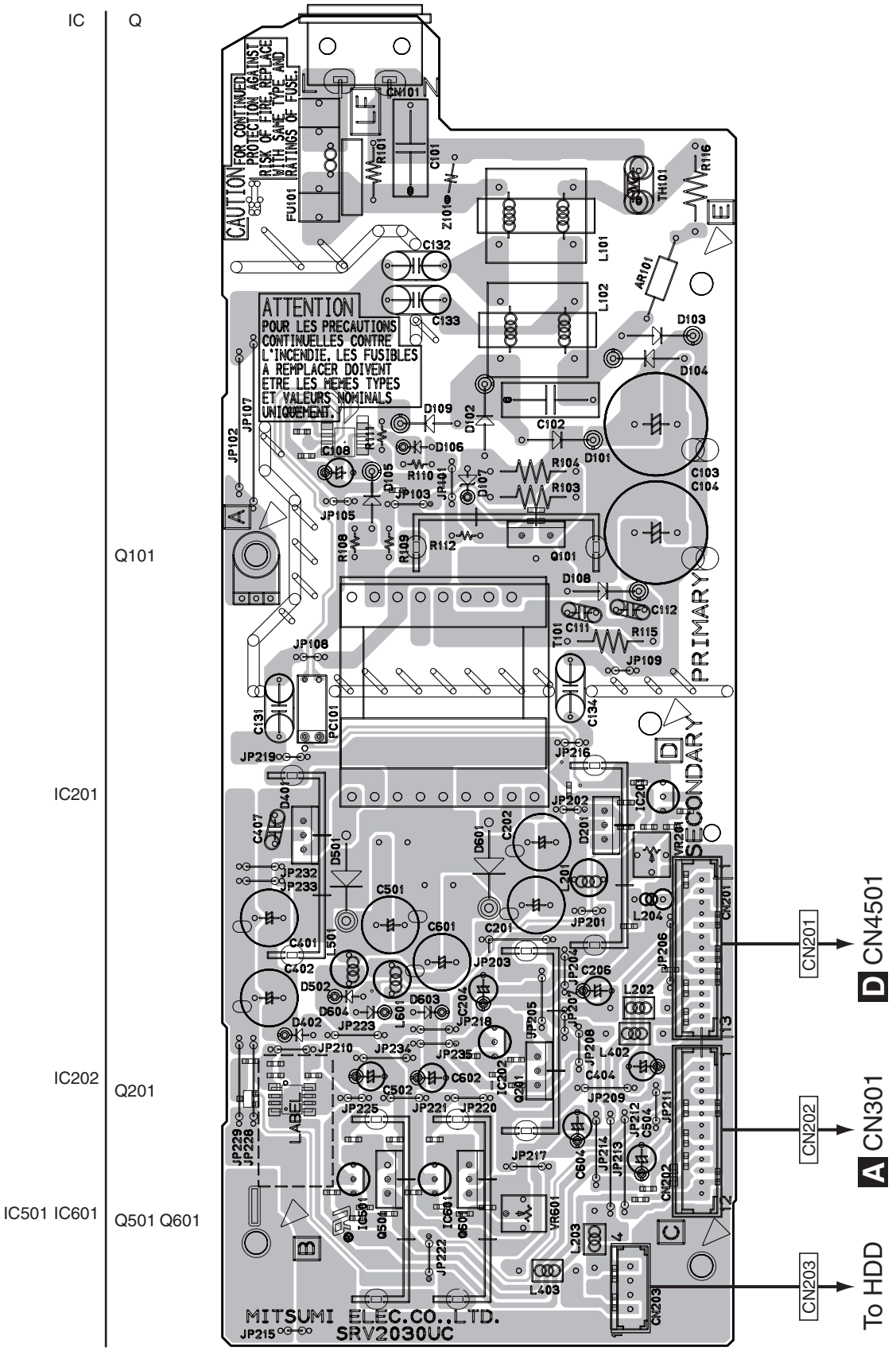


11.7 POWER SUPPLY ASSY

SIDE A

G POWER SUPPLY ASSY

SIDE A



G G

SIDE B

G POWER SUPPLY ASSY

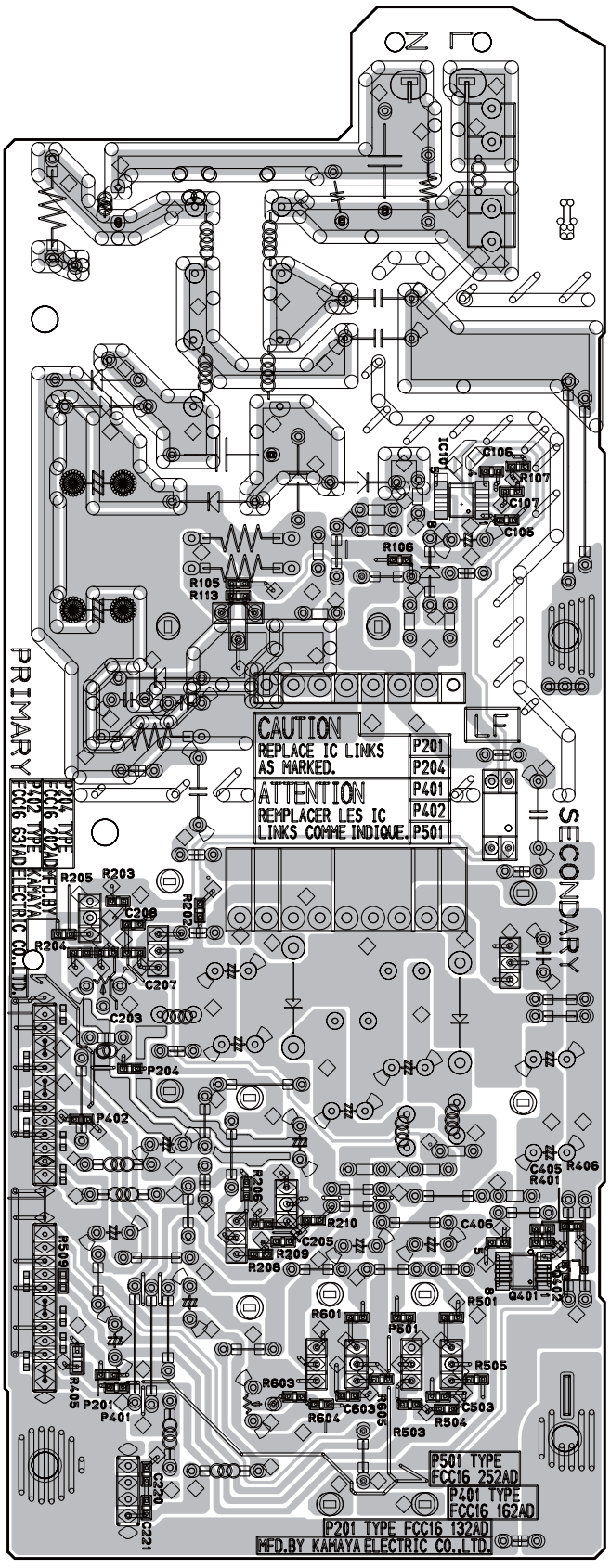
SIDE B

IC Q

IC101

Q402
Q401

CN201
CN202
CN203



G

G

DVR-660H-K

12. PCB PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*

● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56 x 10^1 → 561 ····· RD1/4PU 5 6 1 J
47k Ω → 47 x 10^3 → 473 ····· RD1/4PU 4 7 3 J
0.5 Ω → R50 ····· RN2H R 5 0 K
1 Ω → 1R0 ····· RS1P 1 R 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 x 10^1 → 5621 ····· RN1/4PC 5 6 2 1 F

● *Meaning of the figures and others in the parentheses in the parts list.*

Example) IC 301 is on the point (face A, 91 of x-axis, and 111 of y-axis) of the corresponding PC board.

IC 301 (A, 91, 111) IC NJM2068V

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
	1	..ETAB ASSY (DVR-660H-K ONLY)	VWV2344
NSP	1	..TUJB ASSY	YWM1007
	2	..SERVICE DVUB ASSY	YXX1001
	2	..SERVICE TUJB ASSY	YXX1011
NSP	1	..FLKB ASSY	YWM1005
	2	..SERVICE FRJB ASSY	YXX1004
	2	..SERVICE FLKY ASSY	YXX1007
NSP	1	..SERVICE LOADER MAIN (DVR-660H-K)	VXU1014
NSP	1	..SERVICE LOADER MAIN (DVR-560H-K,DVR-460H-K)	VXU1013
	2	..SERVICE MAIN ASSY (DVR-660H-K)	VXX3309
	2	..SERVICE MAIN ASSY (DVR-560H-K,DVR-460H-K)	VXX3308
⚠	1	..POWER SUPPLY ASSY	VWR1408

A SERVICE TUJB ASSY

MISCELLANEOUS

Mark	No.		Description	Part No.
	IC	101	(A,201,131) MICROCOMPUTER IC	PMC026A8
	IC	102	(A,225,166) RESET IC	BD4846G
	IC	104	(A,175,152) IC	TC7MB3257FK
⚠	IC	150	(B,229,147) FUSE	CEK1278
⚠	IC	317	(B,167,59) FUSE	CEK1278
	IC	401	(A,94,122) IC FOR DVD REC	HA118326APFR
	IC	402	(A,119,99) OP-AMP IC	BA4560RF
	Q	101	(A,218,157) DIGITAL TRANSISTOR	DTC124EUA
	Q	201	(B,196,68) TRANSISTOR	2SD2114K
	Q	303	(A,153,183) TRANSISTOR	UMD2N
	Q	304	(A,160,180) TRANSISTOR	2SD2153
	Q	305	(B,179,66) TRANSISTOR	UMD2N
	Q	306	(B,185,66) TRANSISTOR	2SC2411K
	Q	307	(B,170,59) TRANSISTOR	UMD2N
	Q	308	(B,170,67) TRANSISTOR	2SC2411K
	Q	309	(B,163,56) TRANSISTOR	2SC5876
	Q	310	(B,159,69) TRANSISTOR	2SC4081
	Q	311	(B,156,60) CHIP TRANSISTOR	HN1A01FU
	Q	403	(A,94,99) TRANSISTOR	2SA1576A
	Q	404	(A,93,83) TRANSISTOR	UMD2N
	Q	405	(A,90,99) TRANSISTOR	2SC4081
	Q	406	(A,42,78) TRANSISTOR	2SD2114K
	Q	407	(A,42,97) TRANSISTOR	2SD2114K
	Q	408	(A,42,84) TRANSISTOR	2SD2114K
	Q	409	(A,48,100) TRANSISTOR	2SD2114K
	Q	410	(A,87,96) TRANSISTOR	2SC4081
	Q	602	(B,59,163) TRANSISTOR	2SA1576A
	Q	603	(B,66,167) TRANSISTOR	2SC4081
	D	101	(A,221,164) DIODE	1SS355
	D	102	(A,218,163) DIODE	1SS355
	D	103	(A,150,63) DIODE	1SS355
	D	104	(B,167,176) DIODE	1SR154-400
	D	110	(B,174,176) DIODE	1SS352
	D	201	(B,189,62) DIODE	1SS355
	D	301	(B,172,48) DIODE	UDZS15(B)
	D	302	(B,176,72) DIODE	UDZS9R1(B)
	D	303	(B,160,54) DIODE	1SS355
	D	304	(B,174,69) DIODE	1SS355
	D	401	(A,107,96) DIODE	UDZS11(B)
	D	402	(A,74,150) DIODE	UDZS6R8(B)
	D	418	(B,93,79) DIODE	1SS355
	D	419	(A,97,84) DIODE	1SS355
	D	701	(B,29,33) DIODE	1SS355
	L	201	(A,192,60) RADIAL INDUCTOR	ATH1109
	L	304	(A,160,65) RADIAL INDUCTOR	LFCA331J
	L	305	(B,159,46) INDUCTOR	CTF1399
	L	602	(B,86,172) INDUCTOR	CTF1399
	L	604	(B,43,172) INDUCTOR	CTF1306
	L	605	(B,47,172) INDUCTOR	CTF1306
	JA	402	(A,17,78) 9P PIN JACK	VKB1250
	JA	403	(A,17,132) JACK	VKB1183
	JA	701	(A,18,25) JACK	RKN1004
	KN	101	(A,131,184) WRAPPING TERMINAL	VNF1084
	KN	102	(A,192,46) WRAPPING TERMINAL	VNF1084
	X	101	(A,204,157) CRYSTAL OSCILLATOR (15.0MHz)	CSS1653
	X	102	(A,210,156) CRYSTAL RESONATOR (32 KHz)	VSS1197
	CN	101	(A,35,23) 40P CONNECTOR	VKN2007

Mark	No.		Description	Part No.
CN	103	(A,235,159)	9P CONNECTOR	VKN2015
CN	105	(A,232,148)	CONNECTOR	HLEM17S-1
CN	106	(A,238,107)	CONNECTOR	HLEM11S-1
CN	201	(A,149,43)	CONNECTOR	S2B-PH-K-S
CN	301	(A,178,35)	CONNECTOR	S5B-PH-K-S
U	601	(A,26,178)	TV TUNER PACK	VXF1103
	401		2P 4PIN MINIDIN(S)	AKP1234
⚠ BT	101	(A,179,180)	LITHIUM BATTERY	VEM1037

RESISTORS

R	101	(A,187,125)		RS1/16S101J
R	102	(A,182,123)		RS1/16S101J
R	103	(A,187,118)		RS1/16S101J
R	104	(A,224,158)		RS1/16S473J
R	105	(A,215,149)		RS1/16S101J
R	106	(A,221,158)		RS1/16S0R0J
R	107	(A,224,159)		RS1/16S103J
R	109	(A,212,144)		RS1/16S331J
R	110	(A,211,144)		RS1/16S101J
R	111	(A,212,149)		RS1/16S101J
R	112	(A,222,161)		RS1/16S103J
R	113	(A,219,161)		RS1/16S0R0J
R	116	(B,208,153)		RS1/16S224J
R	117	(A,204,145)		RS1/16S105J
R	118	(B,201,150)		RS1/16S0R0J
R	119	(A,192,167)	CARBON FILM RESISTOR	RD1/4PU393J
R	120	(A,197,163)	CARBON FILM RESISTOR	RD1/4PU682J
R	123	(A,197,149)		RS1/16S101J
R	124	(A,197,146)		RS1/16S101J
R	126	(A,194,147)		RS1/16S101J
R	129	(A,195,149)		RS1/16S101J
R	130	(B,235,155)		RS1/16S0R0J
R	131	(A,190,153)		RS1/16S104J
R	134	(A,187,148)		RS1/16S102J
R	135	(A,185,152)		RS1/16S102J
R	136	(A,189,148)		RS1/16S102J
R	139	(A,184,149)		RS1/16S682J
R	140	(A,182,148)		RS1/16S470J
R	141	(A,182,151)		RS1/16S682J
R	142	(A,181,151)		RS1/16S470J
R	143	(A,183,145)		RS1/16S101J
R	144	(A,185,139)		RS1/16S0R0J
R	145	(A,183,130)		RS1/16S104J
R	150	(A,190,117)		RS1/16S0R0J
R	151	(A,195,118)		RS1/16S0R0J
R	152	(A,200,83)		RS1/16S101J
R	153	(A,198,116)		RS1/16S101J
R	154	(B,202,113)		RS1/16S101J
R	155	(A,201,84)		RS1/16S101J
R	156	(A,201,116)		RS1/16S101J
R	157	(A,203,117)		RS1/16S104J
R	158	(A,202,119)		RS1/16S104J
R	159	(A,205,117)		RS1/16S0R0J
R	160	(A,206,114)		RS1/16S101J
R	161	(A,201,108)		RS1/16S0R0J
R	165	(A,206,117)		RS1/16S104J
R	168	(A,211,112)		RS1/16S181J
R	170	(B,205,123)		RS1/16S104J
R	171	(A,215,114)		RS1/16S101J
R	172	(A,216,114)		RS1/16S101J
R	173	(A,218,113)		RS1/16S104J
R	174	(A,217,111)		RS1/16S104J
R	175	(A,219,113)		RS1/16S331J
R	176	(A,220,124)		RS1/16S102J
R	180	(A,221,132)		RS1/16S101J
R	181	(A,218,133)		RS1/16S101J
R	182	(A,221,134)		RS1/16S101J
R	183	(A,218,135)		RS1/16S101J
R	184	(A,221,136)		RS1/16S101J
R	188	(A,221,140)		RS1/16S331J
R	189	(A,221,142)		RS1/16S471J
R	193	(B,230,171)		RS1/16S104J
R	194	(B,236,171)		RS1/16S104J
R	195	(B,228,171)		RS1/16S104J
R	196	(B,238,171)		RS1/16S101J
R	197	(A,52,22)		RS1/16S0R0J
R	199	(A,209,110)		RS1/16S101J
R	200	(A,221,143)		RS1/16S101J
R	204	(A,182,136)		RS1/16S101J
R	205	(A,185,134)		RS1/16S101J
R	211	(B,179,175)		RS1/16S102J
R	212	(A,196,96)		RS1/16S0R0J
R	213	(A,192,156)		RS1/16S103J
R	218	(A,184,60)		RS1/10S0R0J
R	219	(B,195,74)		RS1/16S332J
R	220	(B,196,71)		RS1/16S222J
R	221	(A,177,145)		RS1/16S101J
R	222	(A,184,140)		RS1/16S0R0J
R	223	(A,174,157)		RS1/16S0R0J
R	224	(A,177,156)		RS1/16S0R0J
R	228	(A,196,160)		RS1/16S0R0J
R	251	(B,147,48)		RS1/10S0R0J
R	302	(B,176,55)		RS1/10S0R0J
R	303	(B,179,55)		RS1/10S0R0J
R	305	(B,158,180)		RS1/16S330J
R	306	(B,180,62)		RS1/16S330J
R	307	(A,161,103)		RS1/10S0R0J
R	308	(A,161,101)		RS1/10S0R0J
R	309	(B,170,56)		RS1/16S152J
R	310	(B,162,61)		RS1/16S472J
R	311	(B,162,71)		RS1/16S821J
R	312	(B,153,58)		RS1/16S103J
R	313	(B,158,54)		RS1/16S184J
R	314	(B,154,67)		RS1/16S223J
R	315	(B,156,54)		RS1/16S1003F
R	316	(B,154,54)		RS1/16S2202F
R	318	(B,160,180)		RS1/16S0R0J
R	401	(A,98,100)		RS1/10S0R0J
R	404	(A,104,99)		RS1/10S0R0J
R	407	(A,58,116)		RS1/10S0R0J
R	408	(A,117,114)		RS1/16S471J
R	409	(A,115,114)		RS1/16S681J
R	410	(A,89,106)		RS1/16S103J
R	411	(A,114,116)		RS1/16S681J
R	412	(B,90,126)		RS1/16S185J
R	413	(A,117,117)		RS1/16S471J
R	414	(A,115,122)		RS1/16S471J
R	415	(A,115,124)		RS1/16S471J

Mark	No.	Description	Part No.
R	416	(A,116,126)	RS1/16S471J
R	417	(A,116,128)	RS1/16S471J
R	418	(A,116,130)	RS1/16S471J
R	419	(A,116,132)	RS1/16S471J
R	420	(B,91,130)	RS1/16S185J
R	421	(A,112,135)	RS1/16S105J
R	422	(A,111,113)	RS1/16S103J
R	423	(A,117,135)	RS1/10S75R0F
R	424	(A,104,134)	RS1/16S105J
R	425	(B,98,126)	RS1/16S104J
R	426	(A,107,140)	RS1/10S75R0F
R	428	(B,97,131)	RS1/16S0R0J
R	430	(A,100,143)	RS1/16S105J
R	431	(A,95,136)	RS1/16S105J
R	432	(A,93,145)	RS1/16S105J
R	433	(B,48,68) CHIP TYPE RESISTOR	RS1/10S68R0F
R	434	(B,46,68)	RS1/10S0R0J
R	436	(A,78,119)	RS1/16S101J
R	437	(A,78,121)	RS1/16S101J
R	438	(A,73,147)	RS1/10S0R0J
R	439	(B,90,125)	RS1/16S185J
R	441	(A,97,153)	RS1/10S75R0F
R	442	(A,91,150)	RS1/10S75R0F
R	443	(A,105,143)	RS1/10S75R0F
R	444	(A,99,149)	RS1/10S75R0F
R	445	(A,101,151)	RS1/10S75R0F
R	446	(A,103,144)	RS1/10S75R0F
R	447	(A,94,151)	RS1/10S75R0F
R	448	(A,75,147)	RS1/10S0R0J
R	450	(B,39,142)	RS1/16S101J
R	451	(B,41,142)	RS1/16S104J
R	452	(B,43,156)	RS1/16S104J
R	453	(A,124,103)	RS1/16S8201F
R	454	(A,106,108)	RS1/16S1002F
R	455	(A,94,103)	RS1/16S470J
R	458	(A,96,98)	RS1/16S471J
R	459	(A,89,103)	RS1/16S471J
R	460	(A,91,103)	RS1/16S470J
R	461	(A,84,97)	RS1/16S681J
R	462	(A,108,105)	RS1/16S1002F
R	463	(A,112,100)	RS1/16S8201F
R	464	(B,40,39) CHIP TYPE RESISTOR	RS1/10S68R0F
R	465	(A,88,100)	RS1/16S471J
R	466	(B,37,39)	RS1/10S0R0J
R	467	(B,41,56) CHIP TYPE RESISTOR	RS1/10S68R0F
R	468	(B,40,45) CHIP TYPE RESISTOR	RS1/10S68R0F
R	469	(B,37,45)	RS1/10S0R0J
R	470	(B,43,50) CHIP TYPE RESISTOR	RS1/10S68R0F
R	471	(B,41,50)	RS1/10S0R0J
R	472	(B,41,89) CHIP TYPE RESISTOR	RS1/10S68R0F
R	473	(B,39,89)	RS1/10S0R0J
R	474	(B,48,80) CHIP TYPE RESISTOR	RS1/10S68R0F
R	475	(B,46,80)	RS1/10S0R0J
R	476	(B,46,74) CHIP TYPE RESISTOR	RS1/10S68R0F
R	477	(B,41,74)	RS1/10S0R0J
R	478	(B,39,61) CHIP TYPE RESISTOR	RS1/10S68R0F
R	479	(A,45,79)	RS1/16S471J
R	480	(B,37,61)	RS1/10S0R0J
R	481	(B,38,56)	RS1/10S0R0J
R	482	(B,35,75)	RS1/16S101J
R	483	(A,47,84)	RS1/16S471J
R	484	(A,42,81)	RS1/16S102J
R	485	(B,49,83)	RS1/16S223J
R	486	(A,44,100)	RS1/16S102J
R	487	(A,41,87)	RS1/16S102J
R	488	(A,42,94)	RS1/16S471J
R	489	(B,48,94)	RS1/16S223J
R	490	(B,34,89)	RS1/16S101J
R	491	(A,50,100)	RS1/16S102J
R	492	(A,48,97)	RS1/16S471J
R	493	(B,43,83)	RS1/16S101J
R	494	(B,43,96)	RS1/16S101J
R	495	(B,39,156)	RS1/16S101J
R	496	(B,43,150)	RS1/16S104J
R	497	(B,39,150)	RS1/16S101J
R	498	(B,39,164)	RS1/16S101J
R	499	(B,43,162)	RS1/16S104J
R	601	(B,64,172)	RS1/16S0R0J
R	604	(B,55,174)	RS1/16S0R0J
R	605	(B,83,170)	RS1/16S103J
R	606	(B,77,172)	RS1/16S103J
R	607	(B,56,166)	RS1/16S102J
R	609	(B,26,174)	RS1/16S0R0J
R	610	(B,54,174)	RS1/16S0R0J
R	611	(B,59,174)	RS1/16S0R0J
R	613	(B,127,173)	RS1/16S0R0J
R	614	(B,129,176)	RS1/16S0R0J
R	635	(B,65,175)	RS1/16S0R0J
R	636	(B,55,187)	RS1/16S0R0J
R	637	(B,77,185)	RS1/16S0R0J
R	701	(B,36,34)	RS1/16S224J
R	702	(B,27,32)	RS1/16S221J
R	704	(B,31,32)	RS1/16S221J

CAPACITORS

C	104	(A,216,147)	CEAT220M25
C	105	(A,223,156)	CKSRYF104Z25
C	106	(A,226,169)	CKSRYF104Z25
C	107	(A,209,144)	CCSRCH331J50
C	109	(A,218,155)	CKSRYF104Z25
C	110	(A,219,164)	CKSRYB105K10
C	111	(B,214,159)	CCSRCH120J50
C	112	(B,210,159)	CCSRCH120J50
C	113	(A,201,145)	CKSRYF105Z10
C	114	(B,201,158)	CCSRCH150J50
C	115	(B,200,153)	CCSRCH150J50
C	120	(B,165,179)	CKSRYF104Z25
C	121	(B,237,153)	CKSRYF105Z10
C	122	(B,173,181)	CKSRYF105Z10
C	123	(A,171,178)	CEAT221M6R3
C	126	(A,187,132)	CKSRYF104Z25
C	131	(A,192,119)	CKSRYF104Z25
C	132	(A,193,116)	CKSRYF104Z25
C	133	(A,197,110)	CKSRYF104Z25
C	134	(A,203,106)	CKSRYF104Z25
C	136	(A,213,121)	CKSRYF105Z10
C	138	(A,221,119)	CEAT2R2M50
C	139	(A,216,126)	CKSRYF104Z25

Mark	No.		Description	Part No.
C	140	(A,216,130)		CKSRYF104Z25
C	141	(A,172,157)		CKSRYF105Z10
C	142	(A,172,159)		CCSRCH102J50
C	147	(B,231,159)		CKSRYF104Z25
C	152	(A,196,97)		CKSRYF105Z10
C	154	(B,229,143)		CKSRYF104Z25
C	155	(B,239,153)		CCSRCH102J50
C	202	(B,186,59)		CKSRYF104Z25
C	204	(A,187,55)		CEAT101M16
C	205	(A,184,50)		CEAT220M25
C	206	(B,193,72)		CCSRCH471J50
C	208	(B,149,46)		CKSRYB104K16
C	211	(A,191,150)		CKSRYF104Z25
C	301	(B,168,43)		CKSRYF104Z25
C	302	(B,176,40)		CKSRYF104Z25
C	303	(A,169,46)		CEAT101M16
C	304	(A,176,45)		CEAT101M16
C	309	(B,164,182)		CKSRYF104Z25
C	310	(B,165,189)		CKSRYF104Z25
C	311	(A,162,188)		CEAT221M16
C	312	(A,149,182)		CEAT101M16
C	313	(B,179,60)		CKSRYF105Z10
C	314	(B,179,70)		CKSRYF104Z25
C	315	(A,181,73)		CEAT101M16
C	316	(A,188,71)		CEAT101M16
C	317	(B,170,54)		CKSRYF104Z25
C	318	(B,170,64)		CKSRYF104Z25
C	319	(A,175,65)		CEAT101M16
C	320	(A,167,71)		CEAT101M16
C	321	(B,166,61)		CKSRYF104Z25
C	322	(B,164,59)		CCSRCH101J50
C	323	(B,163,53)	CERAMIC CAPACITOR	CKSQYF105Z50
C	324	(B,156,64)		CKSRYF104Z25
C	326	(A,159,50)		CEAT100M50
C	328	(B,157,44)		CKSRYF104Z50
C	329	(B,146,184)		CKSRYF104Z25
C	401	(A,100,109)		CKSRYF105Z10
C	402	(A,108,102)		CKSRYF104Z25
C	403	(A,104,104)		CKSRYF104Z25
C	404	(A,93,111)		CKSRYF105Z10
C	406	(A,86,106)		CKSRYB104K16
C	407	(A,84,106)		CKSRYB105K10
C	408	(A,82,106)		CKSRYB105K10
C	409	(A,80,106)		CKSRYB105K10
C	410	(A,79,106)		CKSRYB105K10
C	411	(A,115,113)		CKSRYB105K10
C	412	(A,114,118)		CKSRYB105K10
C	413	(B,92,115)		CKSRYB104K16
C	414	(A,107,112)		CKSRYF104Z25
C	415	(A,109,112)		CKSRYF104Z25
C	418	(A,112,120)		CKSRYF105Z10
C	419	(A,112,122)		CKSRYB105K10
C	420	(A,112,124)		CKSRYB105K10
C	421	(A,113,126)		CKSRYB105K10
C	422	(A,113,128)		CKSRYB105K10
C	423	(A,113,130)		CKSRYB105K10
C	424	(A,113,132)		CKSRYB105K10
C	425	(A,114,134)		CKSRYB105K10
C	426	(A,105,137)		CKSRYB104K16
C	427	(A,108,143)		CKSRYB103K50
C	428	(A,95,134)		CKSRYB104K16
C	429	(A,103,138)		CKSRYB105K10
C	430	(A,101,136)		CKSRYB104K16
C	431	(A,98,135)		CKSRYB104K16
C	432	(A,97,140)		CKSRYB105K10
C	434	(A,89,134)		CKSRYB104K16
C	435	(A,80,114)		CKSRYF104Z25
C	436	(A,79,114)		CKSRYF104Z25
C	437	(A,77,112)		CKSRYF104Z25
C	438	(A,78,118)		CKSRYF105Z10
C	439	(B,87,125)		CKSRYB104K16
C	440	(A,88,137)		CKSRYB104K16
C	441	(A,81,139)		CKSRYF105Z10
C	442	(A,81,135)		CKSRYF104Z25
C	443	(A,100,145)		CKSRYB105K10
C	444	(A,94,139)		CKSRYB105K10
C	445	(A,86,146)		CKSRYB105K10
C	446	(A,92,143)		CKSRYB105K10
C	447	(A,99,153)		CKSRYB103K50
C	448	(A,104,147)		CKSRYB103K50
C	452	(A,104,93)		CEAT101M10
C	453	(A,92,107)		CEAT101M10
C	454	(A,73,113)		CEAT101M10
C	455	(A,121,121)		CEAT4R7M50
C	456	(A,112,144)		CEAT1R0M50
C	457	(A,89,141)		CEAT100M50
C	458	(A,73,138)		CEAT101M10
C	459	(A,94,96)		CKSRYF105Z10
C	460	(A,91,96)		CKSRYF105Z10
C	461	(B,43,142)		CCSRCH471J50
C	462	(B,41,156)		CCSRCH471J50
C	463	(B,41,150)		CCSRCH471J50
C	464	(A,117,95)		CKSRYF104Z25
C	465	(B,41,162)		CCSRCH471J50
C	467	(A,87,93)		CKSRYF105Z10
C	468	(A,111,114)		CKSRYF104Z25
C	469	(A,110,116)		CKSRYF104Z25
C	470	(B,34,143)		CCSRCH102J50
C	471	(A,122,107)		CEAT100M50
C	472	(A,127,96)		CEAL100M16
C	473	(A,117,86)		CEAT101M16
C	474	(A,112,107)		CEAT100M50
C	475	(A,113,95)		CEAL100M16
C	476	(B,48,52)		CKSRYB103K50
C	477	(B,34,157)		CCSRCH102J50
C	478	(A,58,68)	ELECT. CAPACITOR	CEAT102M6R3
C	482	(B,33,75)		CCSRCH471J50
C	483	(A,60,48)	ELECT. CAPACITOR	CEAT102M6R3
C	484	(B,34,85)		CCSRCH471J50
C	485	(B,46,57)		CKSRYB103K50
C	486	(A,60,57)	ELECT. CAPACITOR	CEAT102M6R3
C	487	(A,49,91)	ELECT. CAPACITOR	CEAT102M6R3
C	488	(A,56,78)	ELECT. CAPACITOR	CEAT471M6R3
C	489	(A,49,73)	ELECT. CAPACITOR	CEAT471M6R3
C	490	(A,48,62)	ELECT. CAPACITOR	CEAT102M6R3
C	491	(A,57,85)		CEAT470M16
C	492	(A,99,81)		CEAT221M6R3
C	493	(B,41,83)		CCSRCH471J50

Mark	No.		Description	Part No.
C	495	(A,57,96)		CEAT470M16
C	496	(A,89,135)		CKSRYF104Z25
C	497	(B,41,96)		CCSRCH471J50
C	498	(B,34,148)		CCSRCH102J50
C	499	(B,34,162)		CCSRCH102J50
C	603	(B,51,174)		CKSRYB222K50
C	604	(B,61,174)		CCSRCH101J50
C	605	(B,43,174)		CCSRCH100D50
C	606	(B,47,174)		CCSRCH100D50
C	607	(A,74,165)		CEAT1R0M50
C	609	(A,62,167)		CEAT101M10
C	701	(B,39,35)		CKSRYF105Z10
C	702	(B,29,29)		CCSRCH681J50
C	703	(B,24,31)		CKSRYF104Z25

B SERVICE FLKY ASSY

MISCELLANEOUS

IC	101	(B,143,78)	FL DRIVER IC	PT6315
Q	103	(B,122,57)	DIGITAL TRANSISTOR	DTC124EUA
Q	104	(B,204,73)	TRANSISTOR	2SC5712
Q	105	(B,201,66)	TRANSISTOR	2SA1576A
Q	106	(B,211,61)	TRANSISTOR	2SC4081
Q	107	(B,108,56)	DIGITAL TRANSISTOR	DTC124EUA
Q	111	(B,98,56)	DIGITAL TRANSISTOR	DTC124EUA
Q	112	(B,61,49)	TRANSISTOR	2SD2153
Q	203	(B,144,32)	DIGITAL TRANSISTOR	DTC124EUA
Q	204	(B,79,18)	DIGITAL TRANSISTOR	DTC124EUA
Q	206	(B,76,23)	DIGITAL TRANSISTOR	DTC124EUA
D	107	(B,222,46)	DIODE	RF101L2S
D	108	(B,202,81)	DIODE	UDZS15(B)
D	109	(B,200,73)	DIODE	1SS355
D	110	(B,213,71)	DIODE	RF101L2S
D	111	(B,209,79)	DIODE	UDZS2R4(B)
D	112	(B,200,83)	DIODE	UDZS13(B)
D	113	(A,123,62)	LED(RED)	SLR-343VC(NPQ)
D	205	(A,83,21)	LED(BLUE)	SLR343BC4T(JKLM)
D	212	(A,73,22)	LED(ORANGE)	SLR-343DC(NPQ)
L	101	(A,198,70)	AXIAL INDUCTOR	LAU220J
V	101	(A,97,89)	FLUORESCENT TUBE	VAW1091
S	103	(A,93,45)	SWITCH	VSG1024
S	104	(A,93,39)	SWITCH	VSG1024
S	105	(A,68,39)	SWITCH	VSG1024
S	106	(A,119,39)	SWITCH	VSG1024
S	107	(A,52,39)	SWITCH	VSG1024
S	108	(A,119,45)	SWITCH	VSG1024
S	109	(A,52,45)	SWITCH	VSG1024
S	110	(A,213,40)	SWITCH	VSG1024
S	111	(A,68,45)	SWITCH	VSG1024
S	112	(A,83,72)	SWITCH	VSG1024
S	113	(A,61,63)	SWITCH	VSG1024
S	114	(A,36,63)	SWITCH	VSG1024
S	115	(A,9,63)	SWITCH	VSG1024
S	201	(A,149,44)	SWITCH	VSG1024
S	202	(A,79,10)	SWITCH	VSG1024
T	101	(A,223,54)	TRANSFORMER	VTT1171
CN	101	(A,188,63)	CONNECTOR	9604S-17C
	102		HOUSING ASS'Y(6P)	YKP1007
	103		REMOTE RECEIVER UNIT	GP1UM28XK0VF

Mark	No.		Description	Part No.

RESISTORS

R	104	(B,196,60)		RS1/16S0R0J
R	110	(B,126,74)		RS1/16S470J
R	111	(B,129,74)		RS1/16S470J
R	112	(B,124,74)		RS1/16S470J
R	113	(B,134,72)		RS1/16S823J
R	117	(B,195,75)		RS1/16S104J
R	118	(B,193,75)		RS1/16S102J
R	119	(B,210,73)		RS1/16S273J
R	120	(B,203,65)		RS1/16S103J
R	121	(B,216,59)		RS1/10S221J
R	122	(B,216,56)		RS1/16S122J
R	123	(B,210,83)		RS1/16S103J
R	124	(B,205,61)		RS1/16S102J
R	125	(B,81,43)		RS1/16S103J
R	126	(B,83,43)		RS1/16S103J
R	127	(B,75,44)		RS1/16S222J
R	128	(B,111,42)		RS1/16S222J
R	129	(B,73,42)		RS1/16S222J
R	130	(B,114,40)		RS1/16S222J
R	131	(B,71,42)		RS1/16S332J
R	132	(B,116,40)		RS1/16S332J
R	133	(B,117,63)		RS1/16S271J
R	135	(B,215,40)		RS1/16S562J
R	137	(B,220,83)		RS1/16S0R0J
R	138	(B,193,84)		RS1/16S0R0J
R	139	(B,115,63)		RS1/16S271J
R	144	(B,150,68)		RS1/16S0R0J
R	148	(B,77,44)		RS1/16S470J
R	149	(B,88,44)		RS1/16S470J
R	150	(B,61,58)		RS1/16S562J
R	152	(B,102,66)		RS1/16S271J
R	155	(B,49,54)		RS1/16S152J
R	156	(B,47,54)		RS1/16S392J
R	157	(B,47,51)		RS1/16S152J
R	158	(B,63,44)		RS1/16S103J
R	159	(B,14,56)		RS1/16S470J
R	160	(B,16,56)		RS1/16S222J
R	161	(B,56,59)		RS1/16S222J
R	162	(B,21,61)		RS1/16S0R0J
R	163	(B,19,59)		RS1/16S0R0J
R	164	(B,52,55)		RS1/16S152J
R	165	(B,47,58)		RS1/16S0R0J
R	166	(B,47,49)		RS1/16S152J
R	204	(B,151,28)		RS1/16S562J
R	205	(B,78,13)		RS1/16S332J
R	221	(B,61,27)		RS1/16S182J
R	222	(B,98,26)		RS1/16S182J
R	224	(B,65,27)		RS1/16S182J
R	270	(B,149,28)		RS1/16S182J
R	272	(B,147,28)		RS1/16S182J

CAPACITORS

C	103	(B,95,83)		CKSRYB103K50
C	104	(B,216,85)		CKSRYB103K50
C	106	(B,148,68)		CKSRYF104Z25
C	107	(B,155,82)		CKSRYF104Z50
C	112	(B,132,80)		CKSRYF104Z25

Mark	No.	Description	Part No.
C	113	(A,206,55)	CEAL101M10
C	115	(B,197,66)	CKSRYF104Z25
C	116	(A,200,62)	CEJQ101M16
C	117	(B,206,65)	CKSRYB223K50
C	118	(A,218,63) ELECTR. CAPACITOR	CEAL100M50
C	119	(B,98,35)	CKSRYF104Z25
C	121	(B,212,56)	CKSRYB103K50
C	123	(B,108,42)	CKSRYF104Z25
C	124	(B,106,42)	CKSRYF104Z25
C	127	(B,220,76)	CKSRYF104Z25
C	128	(A,225,64)	CEAL101M10
C	129	(B,115,67)	CKSRYF104Z25
C	132	(B,117,67)	CKSRYF104Z25
C	133	(B,102,70)	CKSRYF104Z25
C	134	(B,54,36)	CKSRYF104Z25
C	135	(B,54,48)	CKSRYF104Z25
C	201	(B,76,13)	CKSRYF104Z25
C	202	(B,57,27)	CKSRYF104Z25
C	204	(B,96,26)	CKSRYF104Z25
C	270	(B,143,28)	CKSRYF104Z25

C SERVICE FRJB ASSY

MISCELLANEOUS

JA	301	(A,211,31)	4P MINIDIN SOCKET(S)	AKP1238
JA	302	(A,181,32)	JACK	VKB1208
KN	301	(A,232,17)	WRAPPING TERMINAL	VNF1084
KN	302	(A,154,17)	WRAPPING TERMINAL	VNF1084
CN	301	(A,198,7)	CONNECTOR	HLEM11S-1

RESISTORS

R	303	(B,181,16)	RS1/16S0R0J
R	305	(B,178,15)	RS1/16S0R0J
R	306	(B,165,15)	RS1/16S0R0J

CAPACITORS

C	303	(B,181,20)	CCSRCH471J50
C	305	(B,162,18)	CCSRCH471J50

D SERVICE MAIN ASSY (DVR-660H-K)

SEMICONDUCTORS

IC	201		K4S641632K-UC60
IC	501		BD7956FS
IC	1001		MC-10050F1-507LU1A
IC	1102		VYW2410
IC	1201,1221		EDD5116AFTA-6B-E
IC	1301,1302		NJM12904V
IC	3101		AK5359ET
IC	3201		PCM1742KE
IC	3202		UPC4570G2-A
IC	3701		TC7WH34FU
IC	3702,5203		TC7SH08FUS1
IC	3707		PST3813U
⚠ IC	4501,4502		CEK1285
IC	4511		S-1170B33UC-OTS
IC	4521		S-1170B25UC-OTK
IC	4531		MM1701WH
IC	4541		MM1563DF
IC	4552		S-1170B50UC-OUJ
IC	4561		S-1112B50MC-L7J
IC	4562		S-1112B33MC-L6S
IC	4571		S-1132B18-U5
IC	5103		UPD72852AGB-8EU-A
IC	5151		TC7MBL3257AFK
IC	5202		R5523N001B
IC	5204		R1173H001B
IC	5602		88SA8040B1-TBC1
IC	5801		SII9002CSU
IC	5803		TC7WPB306FK
IC	5804		TC7WB125FK
Q	102		RT1N141U
Q	1801,1811,2501-2505		2SA1576A
Q	3301,3303,3305,3307		2SA1576A
Q	3302,3304,3306,3308		2SC4081
Q	4581,5701		2SC4081
Q	5801		HN1C01FU
Q	5802		UMB1N
Q	5804		DTC124EUA
Q	5805		2SA1576A
Q	5808		2SK2034
Q	5810		UMF21N
D	3201		DAN202U
D	4521,4552,4571		RB501V-40

MISCELLANEOUS

L	105	CHIP COIL	BTH1103
L	1001-1004,1021-1025	EMI FILTER	DTL1106
L	1005	INDUCTOR	LCTC150K2125
L	1801	CHIP COIL	LCYA390J2520
L	1811	INDUCTOR	LCYA150J2520
L	1821,1831,5122,5601	EMI FILTER	DTL1106
L	3301,3303,3305,3307	CHIP COIL	LCYA180J2520
L	3302,3304,3306,3308	INDUCTOR	LCYA100J2520
L	5101	INDUCTOR	CTF1305
L	5201,5202	COIL	ATH7015
L	5701	INDUCTOR	CTF1382
L	5801-5804	EMI FILTER	ATF1209
L	5805	EMI FILTER	DTL1106
JA	5701	JACK	VKB1159
JA	5801	HDMI CONNECTOR	AKP1318
X	101	CERAMIC RESONATOR (16.934MHZ)	DSS1157
X	1001	CRYSTAL RESONATOR (24.576MHZ)	VSS1220
X	1002	CRYSTAL RESONATOR (27MHZ)	VSS1172
X	5101	CRYSTAL (24.576MHZ)	VSS1211
X	5201	CRYSTAL (48MHZ)	VSS1218
X	5502	CRYSTAL (25MHZ)	VSS1214
CN	101	CONNECTOR	DKN1404
CN	201	CONNECTOR	VKN2029
CN	501	CONNECTOR	DKN1312
CN	502	4P CONNECTOR	DKN1288
CN	601	5P CONNECTOR	DKN1402
CN	1401	CONNECTOR	VKN2030
CN	1402	07P CONNECTOR	RKN1048
CN	1501	50P B TO B CONNECTOR	VKN2079
CN	2301	40P CONNECTOR	VKN2065
CN	3801	CONNECTOR	CKS5321
CN	4501	KR CONNECTOR	S13B-PH-K-S

Mark	No.	Description	Part No.
	CN 5101	CONNECTOR	VKN1932
	CN 5201	CONNECTOR	VKN1936
	CN 5604	SATA PLUG HEADER	VKN2077
		HEATSINK(AL)	VNH1079
		SCREW	BBZ30P060FTC
		RADIATION SHEET	VEB1360

RESISTORS

	R	174	RS1/16S4701F
	R	204-206,317-320	RAB4CQ330J
	R	219,220	RAB4CQ472J
	R	271,273,274,3230	RS1/10S0R0J
	R	501	DCN1171
	R	502	DCN1172
	R	510,511	RS1/10S1R8J
	R	1003	RS1/16S6800F
	R	1004,1301,3306,3312	RS1/16S4700F
	R	1032-1035,1411,3005	RAB4CQ103J
	R	1036,1039	RS1/16S43R0D
	R	1037,1040	RS1/16S1000F
	R	1241,1242,1248,1249	RAB4CQ0R0J
	R	1245,1246,1255,1256	RAB4CQ220J
	R	1261,1262,1268,1269	RAB4CQ0R0J
	R	1265,1266,1273,1274	RAB4CQ220J
	R	1281-1283,1287	RAB4CQ470J
	R	1302,1303,1312,1313	RS1/16S1001F
	R	1314,2506,4574,4575	RS1/16S0R0J
	R	1505-1513	RAB4CQ0R0J
	R	2502,2505,2508,2511	RS1/16S1500F
	R	2514	RS1/16S1500F
	R	3210,3216	RN1/16SE1201D
	R	3211,3217	RN1/16SE1002D
	R	3218,3223	RN1/16SE2202D
	R	3307,3313,3324,3325	RS1/16SS5601F
	R	3318,3323	RS1/16S4700F
	R	3810-3813,3837-3840	RAB4CQ330J
	R	3824	RAB4CQ820J
	R	3828-3833	RAB4CQ223J
	R	3851,5632,5638,5642	RAB4CQ330J
	R	4501,4551-4554,4556	RS1/10S0R0J
	R	4504,4505,4507	RS1/10S272J
	R	4716,4717	RAB4CQ103J
	R	4721,4722	RAB4CQ101J
	R	5101,5102	RAB4CQ104J
	R	5105,5106	RAB4CQ680J
	R	5118	RN1/16SE9101D
	R	5119-5122	RS1/16S56R0D
	R	5131	RN1/16SE5101D
	R	5203	RS1/16S3301F
	R	5204	RS1/16S8200F
	R	5220	RS1/16S1501F
	R	5445,5819,5820	RS1/10S0R0J
	R	5646	RAB4CQ330J
	R	5651	RS1/16S1202F
	R	5664,5672,5705,5830	RS1/16S0R0J
	R	5706	RS1/16S75R0F
	R	5825-5828	RAB4CQ220J
	R	5855	RAB4CQ100J
	Other Resistors		RS1/16SS###J

CAPACITORS

	C	100,101,105,117	CKSSYB102K50
	C	103,1009	VCH1234
	C	104,154,162,1004	VCG1057
	C	106,159,167,288	CKSSYF104Z16
	C	107	CKSSYB681K50
	C	113,114	CKSSYB472K25
	C	115,135,144,145	CKSSYB103K16
	C	116,120,124,128	CKSSYB104K10
	C	121,122	CKSSYB222K50
	C	125,129,280-285	VCG1058
	C	127,1805,1815	CKSSYB473K10
	C	130,181,194,4511	CKSQYB475K6R3
	C	131	CKSSYB683K10
	C	133,134,136,169	CKSSYB104K10
	C	137	CKSSYB682K25
	C	140,141,155	DCH1199
	C	142,143,146,180	DCH1201
	C	147,148	DCH1198
	C	149,157,158,187	CKSSYB103K16
	C	152,164,189,289	CKSSYB102K50
	C	153,1020,4516	CEVW100M16
	C	156	CKSSYB182K50
	C	163,1007,3108,3219	CEVW221M4
	C	165,166,176,177	CCSSCH220J50
	C	170,172-174	CCSSCH470J50
	C	171,197,504,516	CKSSYB104K10
	C	182,286,1021,1051	DCH1201
	C	188,1058,1205,1206	CKSSYB103K16
	C	287,2305,4522,4531	VCG1058
	C	290,501,1057,1060	CKSSYF104Z16
	C	291,508,1005,1011	CKSSYB102K50
	C	502	DCH1263
	C	503	CKSRYB471K50
	C	505,514,515	CKSRYB104K25
	C	509	CCSSCH330J50
	C	510,3304,3317,3323	CCSSCH680J50
	C	511	CKSQYB105K16
	C	512,513,803,832	CKSRYF104Z16
	C	532,1001,1002	CKSSYB104K10
	C	824	CKSQYF104Z25
	C	1003,1024,1036,1039	CEVW101M4
	C	1006,1008,1010,1013	VCG1057
	C	1012,1215,1236	VCH1268
	C	1014,1023,1026,1038	CKSSYB102K50
	C	1015-1019,1027-1035	CKSSYB104K10
	C	1022,1025,1037,1040	VCG1057
	C	1041,1049,1053,1061	CKSSYB102K50
	C	1042,1043	CCSSCJ3R0C50
	C	1044,1045,3303,3316	CCSSCH5R0C50
	C	1047	CKSSYB104K10
	C	1048,1052,1056,1059	VCG1057
	C	1050,5121,5122,5613	CEVW101M4
	C	1062,1066,1102,1104	VCG1057
	C	1063,1067,1105,1203	CKSSYF104Z16
	C	1064,1065,1068,1101	CKSSYB102K50
	C	1103,1207,1209,1210	CKSSYB102K50
	C	1113,1202,1204,1208	VCG1057
	C	1211-1214,1222,1230	CKSSYF104Z16

Mark	No.	Description	Part No.
C	1216-1221,1223,1227		VCG1057
C	1224,1225,1401,3701		CKSSYB103K16
C	1226,1228,1229,1504		CKSSYB102K50
C	1231,1235,1316,1501		DCH1201
C	1291,1302,1303,1312		CKSSYF104Z16
C	1301,1315,1802,1812		CKSQYB225K10
C	1304,3207,4515		CEVW470M6R3
C	1313,1503,3105,3202		CKSSYF104Z16
C	1421,1502,1801,1811		VCG1057
C	1803		CCSSCH221J50
C	1804,3204		CKSSYB331K50
C	1813		CCSSCH101J50
C	1814		CCSSCH151J50
C	2501-2505,3104,3107		VCG1057
C	2506,3704,4534,5151		DCH1201
C	3103,3211,3218,4507		CEVW101M16
C	3106,3203,3705,3706		CKSSYB102K50
C	3201		CEAT102M6R3
C	3206,3212,3217,4504		CKSSYF104Z16
C	3213,3214		CKSSYB561K50
C	3215,3216		CCSSCH820J50
C	3220,3332-3335		VCG1057
C	3301,3302,3311,3312		CCSRCH7R0D50
C	3305,3318,3324,3331		CCSSCH150J50
C	3307,3313,3319,3325		CKSRYB105K10
C	3314,3315,3320,3321		CCSRCH7R0D50
C	3322,3329		CCSSCH5R0C50
C	3330		CCSSCH680J50
C	3339-3342,3703,3707		VCG1057
C	3738,3803,3804		VCG1057
C	4501-4503,4505		VCG1057
C	4506,4585,5104,5109		CKSSYF104Z16
C	4508,4509,4572,5809		CEVW221M4
C	4513,4524,4525,4555		CKSQYB475K6R3
C	4532,4557,5604-5611		CKSSYB103K16
C	4533,4541,4562,4563		VCG1058
C	4535-4537,4539,4540		CKSSYB102K50
C	4542,5212		CKSQYB225K10
C	4543,5154,5211,5216		CKSSYB102K50
C	4556,4571,4573		CKSQYB475K6R3
C	4558,4559,4581,4586		CEVW101M16
C	4567,4570,5217		VCG1058
C	5105-5108,5110-5112		VCG1057
C	5113,5114,5153,5209		CKSSYF104Z16
C	5115,5116,5120,5123		VCG1057
C	5117,5118,5640,5641		CCSSCH120J50
C	5119		CKSSYB271K50
C	5132,5133,5152,5205		VCG1057
C	5210		CEVW101M16
C	5213,5601,5602,5702		VCG1057
C	5218,5219,5223,5706		CKSSYB102K50
C	5222,5603,5612,5615		CKSSYF104Z16
C	5614,5617,5622-5632		CKSSYB103K16
C	5616,5812,5813		CKSSYF104Z16
C	5704		CEVW1R0M50
C	5801,5803,5805-5808		VCG1057
C	5802,5804,5819		CKSSYB102K50
C	5814		CKSRYF104Z16
C	5815-5818		CKSRYB104K25
C	5820,5824,5826		VCG1057
C	5821-5823,5825		CKSSYB102K50

D SERVICE MAIN ASSY (DVR-560H-K,DVR-460H-K)

SEMICONDUCTORS

Mark	No.	Description	Part No.
IC	201		K4S641632K-UC60
IC	501		BD7956FS
IC	1001		MC-10050F1-507LU1A
IC	1102		VYW2410
IC	1201,1221		EDD5116AFTA-6B-E
IC	1301,1302		NJM12904V
IC	3101		AK5359ET
IC	3201		PCM1742KE
IC	3202		UPC4570G2-A
IC	3701		TC7WH34FU
IC	3702,5203		TC7SH08FUS1
IC	3707		PST3813U
⚠ IC	4501,4502		CEK1285
IC	4511		S-1170B33UC-OTS
IC	4521		S-1170B25UC-OTK
IC	4531		MM1701WH
IC	4541		MM1563DF
IC	4552		S-1170B50UC-OUJ
IC	4561		S-1112B50MC-L7J
IC	4562		S-1112B33MC-L6S
IC	4571		S-1132B18-U5
IC	5103		UPD72852AGB-8EU-A
IC	5151		TC7MBL3257AFK
IC	5202		R5523N001B
IC	5204		R1173H001B
IC	5602		88SA8040B1-TBC1
IC	5801		SII9002CSU
IC	5803		TC7WPB306FK
IC	5804		TC7WB125FK
Q	102		RT1N141U
Q	1801,1811,2501-2505		2SA1576A
Q	3301,3303,3305,3307		2SA1576A
Q	3302,3304,3306,3308		2SC4081
Q	4581,5701		2SC4081
Q	5801		HN1C01FU
Q	5802		UMB1N
Q	5804		DTC124EUA
Q	5805		2SA1576A
Q	5808		2SK2034
Q	5810		UMF21N
D	3201		DAN202U
D	4521,4552,4571		RB501V-40

MISCELLANEOUS

Mark	No.	Description	Part No.
L	105	CHIP COIL	BTH1103
L	1001-1004,1021-1025	EMI FILTER	DTL1106
L	1005	INDUCTOR	LCTC150K2125
L	1801	CHIP COIL	LCYA390J2520
L	1811	INDUCTOR	LCYA150J2520
L	1821,1831,5122,5601	EMI FILTER	DTL1106
L	3301,3303,3305,3307	CHIP COIL	LCYA180J2520
L	3302,3304,3306,3308	INDUCTOR	LCYA100J2520

Mark	No.	Description	Part No.
L	5101	INDUCTOR	CTF1305
L	5201,5202	COIL	ATH7015
L	5701	INDUCTOR	CTF1382
L	5801-5804	EMI FILTER	ATF1209
L	5805	EMI FILTER	DTL1106
JA	5701	JACK	VKB1159
JA	5801	HDMI CONNECTOR	AKP1318
X	101	CERAMIC RESONATOR (16.934MHz)	DSS1157
X	1001	CRYSTAL RESONATOR (24.576MHz)	VSS1220
X	1002	CRYSTAL RESONATOR (27MHZ)	VSS1172
X	5101	CRYSTAL (24.576MHz)	VSS1211
X	5201	CRYSTAL (48MHz)	VSS1218
X	5502	CRYSTAL (25MHz)	VSS1214
CN	101	CONNECTOR	DKN1404
CN	201	CONNECTOR	VKN2029
CN	501	CONNECTOR	DKN1312
CN	502	4P CONNECTOR	DKN1288
CN	601	5P CONNECTOR	DKN1402
CN	1401	CONNECTOR	VKN2030
CN	1402	07P CONNECTOR	RKN1048
CN	2301	40P CONNECTOR	VKN2065
CN	3801	CONNECTOR	CKS5321
CN	4501	KR CONNECTOR	S13B-PH-K-S
CN	5101	CONNECTOR	VKN1932
CN	5201	CONNECTOR	VKN1936
CN	5604	SATA PLUG HEADER	VKN2077
		HEATSINK(AL)	VNH1079
		SCREW	BBZ30P060FTC
		RADIATION SHEET	VEB1360

RESISTORS

R	174		RS1/16S4701F
R	204-206,317-320		RAB4CQ330J
R	219,220		RAB4CQ472J
R	271,273,274,3230		RS1/10S0R0J
R	501		DCN1171
R	502		DCN1172
R	510,511		RS1/10S1R8J
R	1003		RS1/16S6800F
R	1004,1301,3306,3312		RS1/16S4700F
R	1032-1035,1411,3005		RAB4CQ103J
R	1036,1039		RS1/16S43R0D
R	1037,1040		RS1/16S1000F
R	1241,1242,1248,1249		RAB4CQ0R0J
R	1245,1246,1255,1256		RAB4CQ220J
R	1261,1262,1268,1269		RAB4CQ0R0J
R	1265,1266,1273,1274		RAB4CQ220J
R	1281-1283,1287		RAB4CQ470J
R	1302,1303,1312,1313		RS1/16S1001F
R	1314,2506,4574,4575		RS1/16S0R0J
R	2502,2505,2508,2511		RS1/16S1500F
R	2514		RS1/16S1500F
R	3210,3216		RN1/16SE1201D
R	3211,3217		RN1/16SE1002D
R	3218,3223		RN1/16SE2202D
R	3307,3313,3324,3325		RS1/16SS5601F
R	3318,3323		RS1/16S4700F
R	3810-3813,3837-3840		RAB4CQ330J
R	3824		RAB4CQ820J
R	3828-3833		RAB4CQ223J
R	3851,5632,5638,5642		RAB4CQ330J
R	4501,4551-4554,4556		RS1/10S0R0J
R	4504,4505,4507		RS1/10S272J
R	4716,4717		RAB4CQ103J
R	4721,4722		RAB4CQ101J
R	5101,5102		RAB4CQ104J
R	5105,5106		RAB4CQ680J
R	5118		RN1/16SE9101D
R	5119-5122		RS1/16S56R0D
R	5131		RN1/16SE5101D
R	5203		RS1/16S3301F
R	5204		RS1/16S8200F
R	5220		RS1/16S1501F
R	5445,5819,5820		RS1/10S0R0J
R	5646		RAB4CQ330J
R	5651		RS1/16S1202F
R	5664,5672,5705,5830		RS1/16S0R0J
R	5706		RS1/16S75R0F
R	5825-5828		RAB4CQ220J
R	5855		RAB4CQ100J
Other Resistors			RS1/16SS###J

CAPACITORS

C	100,101,105,117		CKSSYB102K50
C	103,1009		VCH1234
C	104,154,162,1004		VCG1057
C	106,159,167,288		CKSSYF104Z16
C	107		CKSSYB681K50
C	113,114		CKSSYB472K25
C	115,135,144,145		CKSSYB103K16
C	116,120,124,128		CKSSYB104K10
C	121,122		CKSSYB222K50
C	125,129,280-285		VCG1058
C	127,1805,1815		CKSSYB473K10
C	130,181,194,4511		CKSQYB475K6R3
C	131		CKSSYB683K10
C	133,134,136,169		CKSSYB104K10
C	137		CKSSYB682K25
C	140,141,155		DCH1199
C	142,143,146,180		DCH1201
C	147,148		DCH1198
C	149,157,158,187		CKSSYB103K16
C	152,164,189,289		CKSSYB102K50
C	153,1020,4516		CEVW100M16
C	156		CKSSYB182K50
C	163,1007,3108,3219		CEVW221M4
C	165,166,176,177		CCSSCH220J50
C	170,172-174		CCSSCH470J50
C	171,197,504,516		CKSSYB104K10
C	182,286,1021,1051		DCH1201
C	188,1058,1205,1206		CKSSYB103K16
C	287,2305,4522,4531		VCG1058
C	290,501,1057,1060		CKSSYF104Z16
C	291,508,1005,1011		CKSSYB102K50
C	502		DCH1263
C	503		CKSRYB471K50
C	505,514,515		CKSRYB104K25
C	509		CCSSCH330J50
C	510,3304,3317,3323		CCSSCH680J50
C	511		CKSQYB105K16

Mark	No.	Description	Part No.
C	512,513,803,832		CKSRYF104Z16
C	532,1001,1002		CKSSYB104K10
C	824		CKSQYF104Z25
C	1003,1024,1036,1039		CEVW101M4
C	1006,1008,1010,1013		VCG1057
C	1012,1215,1236		VCH1268
C	1014,1023,1026,1038		CKSSYB102K50
C	1015-1019,1027-1035		CKSSYB104K10
C	1022,1025,1037,1040		VCG1057
C	1041,1049,1053,1061		CKSSYB102K50
C	1042,1043		CCSSCJ3R0C50
C	1044,1045,3303,3316		CCSSCH5R0C50
C	1047		CKSSYB104K10
C	1048,1052,1056,1059		VCG1057
C	1050,5121,5122,5613		CEVW101M4
C	1062,1066,1102,1104		VCG1057
C	1063,1067,1105,1203		CKSSYF104Z16
C	1064,1065,1068,1101		CKSSYB102K50
C	1103,1207,1209,1210		CKSSYB102K50
C	1113,1202,1204,1208		VCG1057
C	1211-1214,1222,1230		CKSSYF104Z16
C	1216-1221,1223,1227		VCG1057
C	1224,1225,1401,3701		CKSSYB103K16
C	1226,1228,1229,3106		CKSSYB102K50
C	1231,1235,1316,2506		DCH1201
C	1291,1302,1303,1312		CKSSYF104Z16
C	1301,1315,1802,1812		CKSQYB225K10
C	1304,3207,4515		CEVW470M6R3
C	1313,3105,3202,3206		CKSSYF104Z16
C	1421,1801,1811		VCG1057
C	1803		CCSSCH221J50
C	1804,3204		CKSSYB331K50
C	1813		CCSSCH101J50
C	1814		CCSSCH151J50
C	2501-2505,3104,3107		VCG1057
C	3103,3211,3218,4507		CEVW101M16
C	3201		CEAT102M6R3
C	3203,3705,3706		CKSSYB102K50
C	3212,3217,4504,4506		CKSSYF104Z16
C	3213,3214		CKSSYB561K50
C	3215,3216		CCSSCH820J50
C	3220,3332-3335		VCG1057
C	3301,3302,3311,3312		CCSRCH7R0D50
C	3305,3318,3324,3331		CCSSCH150J50
C	3307,3313,3319,3325		CKSRYB105K10
C	3314,3315,3320,3321		CCSRCH7R0D50
C	3322,3329		CCSSCH5R0C50
C	3330		CCSSCH680J50
C	3339-3342,3703,3707		VCG1057
C	3704,4534,5151		DCH1201
C	3738,3803,3804		VCG1057
C	4501-4503,4505		VCG1057
C	4508,4509,4572,5809		CEVW221M4
C	4513,4524,4525,4555		CKSQYB475K6R3
C	4532,4557,5604-5611		CKSSYB103K16
C	4533,4541,4562,4563		VCG1058
C	4535-4537,4539,4540		CKSSYB102K50
C	4542,5212		CKSQYB225K10
C	4543,5154,5211,5216		CKSSYB102K50
C	4556,4571,4573		CKSQYB475K6R3
C	4558,4559,4581,4586		CEVW101M16
C	4567,4570,5217		VCG1058
C	4585,5104,5109,5113		CKSSYF104Z16
C	5105-5108,5110-5112		VCG1057
C	5114,5153,5209,5222		CKSSYF104Z16
C	5115,5116,5120,5123		VCG1057
C	5117,5118,5640,5641		CCSSCH120J50
C	5119		CKSSYB271K50
C	5132,5133,5152,5205		VCG1057
C	5210		CEVW101M16
C	5213,5601,5602,5702		VCG1057
C	5218,5219,5223,5706		CKSSYB102K50
C	5603,5612,5615,5616		CKSSYF104Z16
C	5614,5617,5622-5632		CKSSYB103K16
C	5704		CEVW1R0M50
C	5801,5803,5805-5808		VCG1057
C	5802,5804,5819		CKSSYB102K50
C	5812,5813		CKSSYF104Z16
C	5814		CKSRYF104Z16
C	5815-5818		CKSRYB104K25
C	5820,5824,5826		VCG1057
C	5821-5823,5825		CKSSYB102K50

E ETAB ASSY

SEMICONDUCTORS

IC	101		UPD99914F1-BAC
IC	181		TC4SU69F
IC	182		TC7SZU04FU
IC	201,202		TC74VCX163245FT
IC	203		TC7MP3125FK
IC	301		LAN9211-ABZJ
IC	401		S-1133B00-U5
IC	411		S-1133B12-U5

MISCELLANEOUS

L	321,331	COIL	VTH1056
F	171,301	EMI FILTER	DTL1106
JA	301	RJ45 CONNECTOR TRNS	VKN2078
X	101	CRYSTAL OSCILLATOR (32.768Khz)	ASS1172
X	301	CRYSTAL (25Mhz)	VSS1214
CN	501	50P B TO B CONNECTOR	VKN2080

RESISTORS

R	111-114		RAB4CQ103J
R	185		RS1/16S0R0J
R	203-210		RAB4CQ220J
R	213-220		RAB4CQ100J
R	304		RAB4CQ473J
R	306-309		RS1/10SR49R9F
R	310		RS1/10SR10R0F
R	311		RS1/16SS1202F
R	403		RS1/16S56R0D
R	404		RS1/16S2001D
	Other Resistors		RS1/16SS###J

CAPACITORS

C	104,106,108,110		VCG1057
C	105,107,109,111		CKSSYB102K50
C	144,146,148,172		VCG1057

Mark	No.	Description	Part No.
C	145,147,149,173		CKSSYB102K50
C	171,301		CEVW101M4
C	181,201,204,310		DCH1201
C	182,184,202,205		VCG1057
C	183,185,189,203		CKSSYB102K50
C	186		CCSSCH270J50
C	187		CCSSCH220J50
C	188		CKSSYB104K16
C	206,212,214,222		CKSSYB102K50
C	211,213,221,223		VCG1057
C	220,324,401,411		VCH1268
C	224,303,305,307		CKSSYB102K50
C	302,304,308,311		VCG1057
C	306,312,320,341		CKSSYF104Z16
C	309,313,315,317		CKSSYB102K50
C	314,316,318,325		VCG1057
C	319,321,326,342		CKSSYB102K50
C	327,328		CCSSCH120J50
C	340		CKSRYB223K50
C	343,404,414,416		CKSSYB102K50
C	402,412,415		VCG1058
C	403,413,417		CKSSYF104Z16
C	418		VCG1057
C	419		VCH1234

F SERVICE DVUB ASSY

MISCELLANEOUS

Mark	No.		Description	Part No.
L	904	(B,218,44)	CHIP FERRITE BEADS	VTL1169
L	905	(B,217,28)	CHIP FERRITE BEADS	VTL1169
L	907	(B,220,10)	CHIP FERRITE BEADS	VTL1169
L	908	(B,217,9)	CHIP FERRITE BEADS	VTL1169
JA	901	(A,204,59)	1394-TERMINAL	VKN2028
JA	902	(A,203,37)	USB CONNECTOR	VKB1226
JA	903	(A,220,15)	USB CONNECTOR	VKB1227
CN	901	(A,231,57)	CONNECTOR	VKN1932
CN	902	(A,231,30)	CONNECTOR	VKN1936

RESISTORS

R	901	(B,222,52)		RS1/16S0R0J
R	902	(B,222,55)		RS1/16S0R0J
R	903	(B,222,63)		RS1/16S0R0J
R	904	(B,222,67)		RS1/16S0R0J
R	905	(B,223,40)		RS1/16S330J
R	906	(B,223,38)		RS1/16S330J
R	907	(B,223,19)		RS1/16S330J
R	908	(A,226,57)		RS1/16S0R0J
R	909	(B,223,21)		RS1/16S330J
R	912	(A,227,69)		RS1/16S0R0J

CAPACITORS

C	905	(B,229,35)		CKSRYF105Z10
C	906	(A,228,18)		CKSRYF105Z10
C	907	(B,216,49)		CKSRYF104Z25
C	908	(B,212,67)		CKSRYF104Z2

G POWER SUPPLY ASSY

POWER SUPPLY ASSY has no service part.